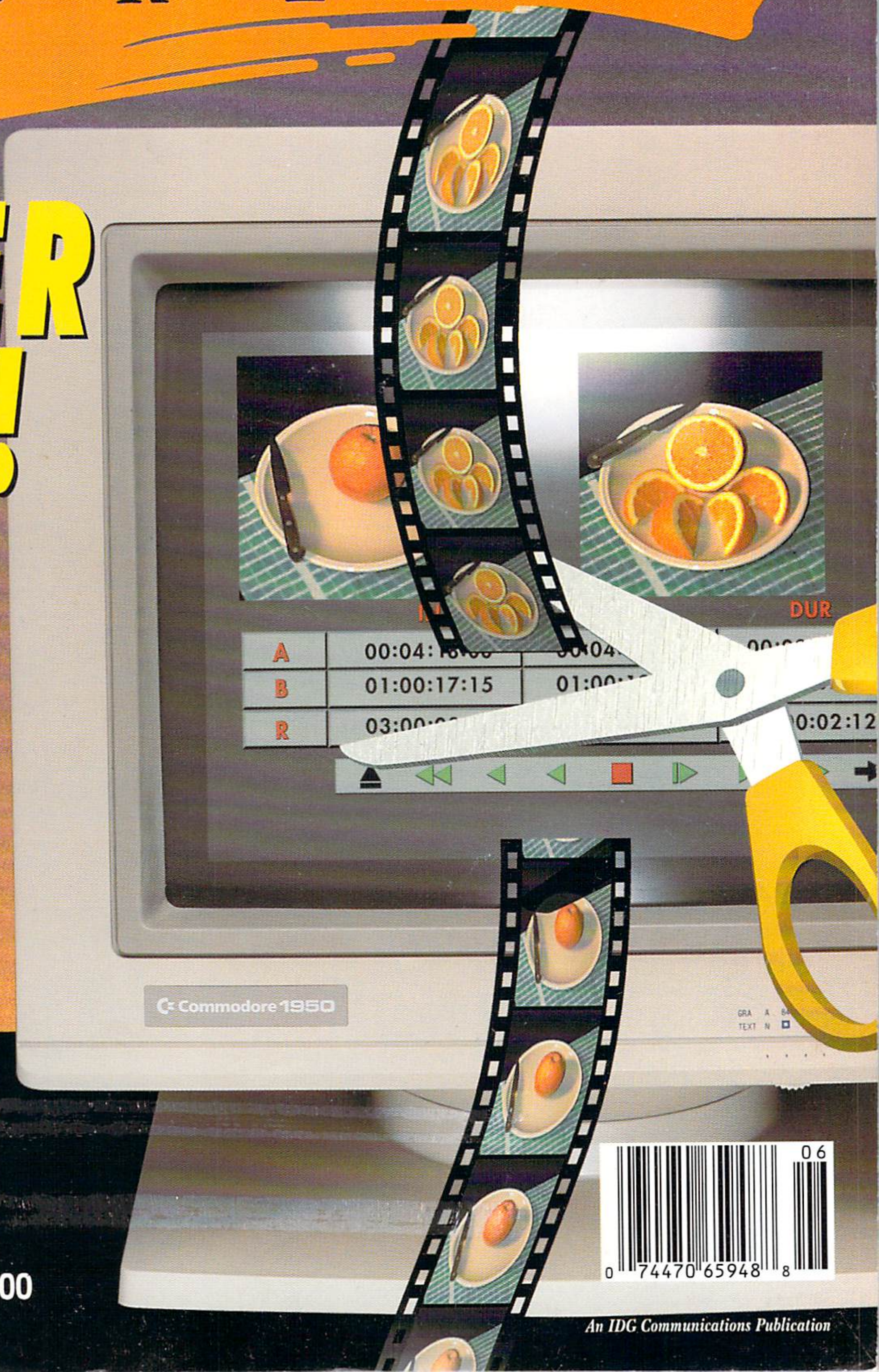
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THE WRITE WAY HAS TWO DIRECTIONS.



Final Writer Release 2

"...Final Writer is arguably the best word processor yet released for the Amiga.", Amiga World, March 1994. "...Final Writer is the top Amiga word processor to rival even the Mac and PC heavyweights.", CU Amiga (England), January 1994. Final Writer has all of Final Copy II's major features plus many more. It includes: Table of Contents, Table of Illustrations, Endnotes, Bibliography, and Index generation; sections; multiple master pages; EPS graphic support; movable text blocks; rotated text and graphics; and a user configured button strip for individual customization of the program's interface. Release 2 now includes complete "Undo" capabilities, easy-to-select Bold, Italic, and Underline options; floating palettes for tools, user buttons, and style sheets; a new tool strip that features drop down menus for fonts, styles, and font size; and additional flexibility in customization of the user interface. Final Writer requires 2 megabytes of RAM, a hard drive, and Workbench 2.0 or higher.

Final Copy II Release 2

"Readers' Choice Award 1993", Amazing Computing; "Award '93 - Best Software Product", Amiga Plus (Germany), "Product of the Year 1993", Amiga Magazin (Germany). What more can we say? This is the most popular and most used word processor on the Amiga today. It features a 110,000 word speller; 1.4 million word thesaurus; auto hyphenation; search and replace; tab stops; adjustable margins; word and sentence counts; paragraph sorting; on-screen math; ARexx port; style sheets; drawing tools; imported IFF graphics; master pages; Compugraphic, Type-1; and NimbusQ outline font support; and the best printing possible on any Workbench supported graphic printer or PostScript® device. Final Copy II works equally well on Workbench 1.3, 2.0 and higher. All you need is a minimum of 1 megabyte of RAM and 2 floppy drives. A new low price now makes this top-rated word processor an even better bargain than ever.

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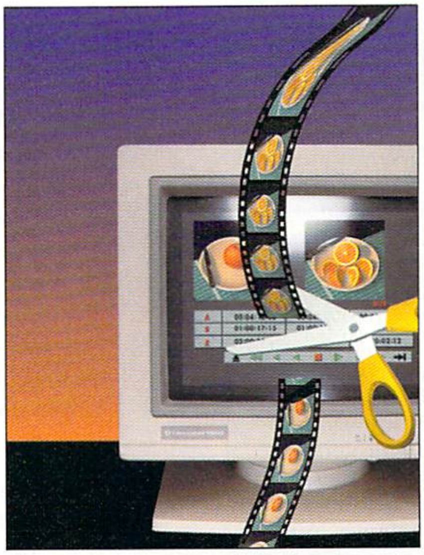
CONTENTS

VOLUME 10, NUMBER 6, JUNE 1994

FEATURES

ARTICLES

COLUMNS



*Video-editing systems share the spotlight this month with a slew of new **AW** features all making their debuts this month. Check out our brand-new columns on AmigaDOS (p.6), PD software (p.8), video (p. 62), and CD32 games (p. 80).*

DEPARTMENTS

REVIEWS

GAMES

By Peter Olafson

COVER BY JACK HARRIS / VISUAL LOGIC

EDITOR'S DRAWER

*Hey, look us over! This issue features new columns and changes that strengthen **AW**'s focus.*

Familiarity breeds complacency, among other things. So—in response to reader suggestions and feedback—we've decided to shake things up a bit. Beginning with this issue, you'll note several editorial changes that reflect the evolving Amiga market and interests of our readers.

First, you said you wanted more tips about using your Amiga. Bingo, we present a new column entitled "Denny on DOS." Successor to the popular "Digging into DOS" series, this column focuses primarily on AmigaDOS. It will familiarize you with operating system issues and provide tips to exploit its powerful capabilities.

Oh, if you haven't guessed by now, the Denny in the column title refers to none other than AmigaDOS expert Denny Atkin, known to many as one of the more knowledgeable and well-respected voices in the Amiga community. He is the author of the popular *Best Amiga Tips and Secrets*, is a familiar presence on the various on-line services, and has served as editor of *Amiga Resource*. Glad to have you on board.

Video/multimedia production is an area where the Amiga really shines, and we're also pleased to welcome one of its brightest stars, Paulo de Andrade, who will share his video expertise each month in a new column entitled "Video in Focus." Paulo will help you to make your video-production operation run more smoothly, spice up your video presentations, and save money. Amiga desktop videomakers of all abilities and persuasions—from the novice to the pro, Toaster and non-Toaster users alike—will discover the latest developments in the video field and learn what new tools are available and how to use them in creating videos.

AmigaWorld boasts a very active on-line readership always on the lookout for network news and especially good software to download. Senior Editor Tim Walsh has adequately filled that need with the scoop on the hottest downloads in his "On-Line Scan" reports. In response to reader requests for more, we have cut Tim loose from the confines of his half-page section of "OverScan" and given him a full-page column, entitled "Prime-Time PD." Tune in to an expanded look at this all-important market, as Tim brings you the latest on-line happenings and choice PD and shareware offerings.

To accommodate the influx of exciting new CD32 titles to the burgeoning games market, we've also commissioned games guru Peter Olafson to beef up his "Game Preserve" column. Peter will be sharing his insights and perspective on the potential of this exciting new game machine and casting a critical eye at the new titles that are arriving daily. In addition to CD32, Peter will continue coverage of the entire Amiga games market, and review non-game CD32 titles in the "Reviews" section.

Denny on DOS, Paulo on video, Tim on PD, and Peter on games. We've got it covered, as we adapt to changes and reader requests to help you get the most out of your computer system. Check it out.



Dennis Brisson
Editor-in-Chief

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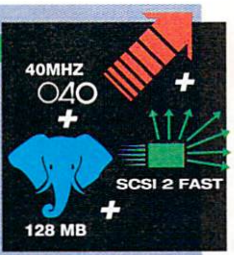
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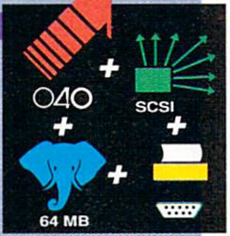
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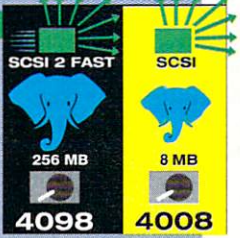


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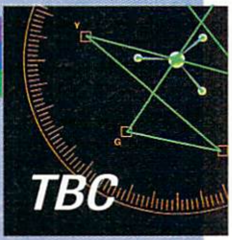
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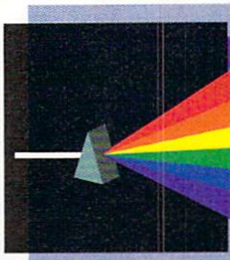
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CIRCLE **28** ON READER SERVICE CARD



TBCPlus™ This professional quality (CCIR-601), all digital time-base-corrector (TBC) uses state-of-the-art 8-bit 4:2:2 video signal processing...***Plus*** it provides a real-time video frame-grabber and 16.7 million color frame-buffer ...***Plus*** there is a full SMPTE/EBU time-code receiver/generator and a separate comb filter available...***Plus*** this incredible product will transcode composite and Y/C inputs...***Plus*** a 3 channel video input switcher (in composite and Y/C) ...***Plus*** programmable video special effects!
CIRCLE **5** ON READER SERVICE CARD



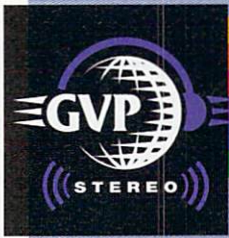
G-Lock™ Bring live video, audio and Amiga graphics together and do it on *any* Amiga! Get connected with the world of video with our built-in transcoder to convert input video to composite, Y/C, RGB or YUV outputs! Full support for AGA systems as well as the 'classic' Amiga 500, 2000 and 3000. Acclaimed interface controls make this easy to use and simple to control. Scala™ users can purchase an EX module from Scala distributors. With G-Lock's *included* dual-input audio panel it's simply the best choice for every personal Amiga owner.
CIRCLE **25** ON READER SERVICE CARD



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Go Beyond AGA Graphics with this real-time, 24-bit, true-color graphics enhancement card. Programmable resolutions up to 1600x1280! 800x600 in 24-bit! We include a custom display pass-through cable for single-monitor use. *Included with Spectrum is a GVP exclusive, the acclaimed EGS SpectraPaint* (formerly EGS-PAINT). Get the standard that others are developing for, EGS Spectrum. Bring workstation graphic power to your Amiga today and see what you've been missing!
CIRCLE **3** ON READER SERVICE CARD



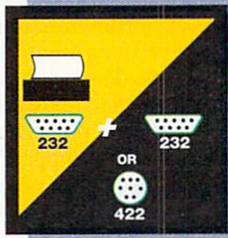
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DSS8+™ Clearly Superior! This is the quietest, most professional and attractive digital sound sampler yet made. Assembled of high-impact clear polycarbonate, this is the sound sampler to own for the Amiga. The versatile **Digital Sound Studio** software includes a multifaceted program for sampling, editing, song composition, stereo sound playback as well as creation of .MOD format songs. New DSS 3.0 software now supports direct-to-disk (hard disk!) recording and playback. New real-time effects and powerful playback and editing features as well as an even more versatile and powerful interface.
CIRCLE **53** ON READER SERVICE CARD



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CIRCLE **41** ON READER SERVICE CARD



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Feeling trapped? Let GVP extend your horizons with our easy-to-use **ioExtender**. Contained on a single card, you will find an additional parallel port, allowing you to connect a printer and a digitizer (such as DSS8+) at the same time. No more messy, unreliable switch boxes! To speed you on your way, we include a high-speed, FIFO buffered serial port. No more dropped data or bogged-down computers when transferring data via modem (at speeds in excess of 57,600!). Optional RS-422 Kit or second RS232 Kit are available for even greater versatility. Free your ports and regain performance on your Amiga with **ioExtender**!
CIRCLE **36** ON READER SERVICE CARD



ImageFX™ This revolutionary must-have-program combines the traditional elements of image processing with amazing high-end special effects and morphing tools. Image FX is east-to-use in every respect. It supports image file formats in use on nearly any platform from Macs to SGI machines.It has built in virtual memory for all Amigas, no more 'out-of-memory' problems! ImageFX even incorporates an on-line help system! ImageFX includes EVERYTHING you need in one low cost package: 24-bit painting, scanner modules, image format conversion, and much more! Recommended by Video Toaster User and in use at Warner Bros. Animation ...ImageFX is the one to have! Get the tool the professionals use and recommend!
CIRCLE **18** ON READER SERVICE CARD

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OVERSCAN

NAB: No Gamble for Amiga

LAS VEGAS—With our favorite machine now a veritable veteran of computer/ broadcast applications, this year's National Association of Broadcasters' (NAB) convention drew dozens of Amiga developers and countless Amiga users among more than 70,000 attendees. The Amiga's representation was solid, and Amiga developers had a lot to show.

Gearing Up

A handful of pre-show events attracted Amiga users. At one, six ex-NewTek employees announced their new company, Play, which will reportedly develop for PC.

Creative Equipment (CEI; RS# 120), which distributes Commodore hardware and add-ons to dealers in the US and Latin America, hosted a dealer meeting. CEI bundles Amigas with various products for distribution through its dealerships. For instance, its **CEI 4000mc** ($3595), consists of an Amiga 4000 and an Emplant (Utilities Unlimited) Mac emulator. Other system bundles include GVP's 40 MHz 4000/040 accelerator (the **CEI 4000turbo**, $3595) and MacroSystem's 40 MHz '040/SCSI-2 board (**CEI 4000warp**, $3495).

CEI's announcement of a new, AGA-supporting monitor thrilled dealers who have been unable to get Commodore 1942s. The swivel-based **CEI 1962** ($499) scans 15 to 40 MHz horizontally and has a .28 mm dot pitch. The 1962 promises to support Super 72 modes; it also offers a built-in international power supply.

CEI will also fill the gap left by Commodore's discontinued A2065 card with the **CEI A4066 Ethernet board** ($295). Although the board's specs look similar to those of the A2065, it promises 25% better performance.

The Show Goes On

On the show floor, several firms boasted alliances that should serve the Amiga well; you will see the results of these relationships in various products. PAL compatibility and video editing were also themes.

In fact, rumors had circulated prior to the show that ***NewTek*** (RS# 121) would introduce a nonlinear editor. And so it did. The **Video Flyer**, still in its early stages of development, was advanced enough to demonstrate and seems very promising. Due for release late this year at less than $4000, the Flyer uses a scalable proprietary compression scheme to generate real-time digital video in up to D-2 quality. Flyer demos should show up in dealerships by late summer; units should ship late in the year.

Those looking for the Screamer, which NewTek announced last year, found instead the **Raptor**, by ***DeskStation Technology***, to replace it. The Raptor includes two RISC processors and 128MB of RAM, and is designed expressly to accelerate LightWave. Raptor is shipping now for less than $15,000. (RS# 135.)

Complements to the Toaster

A few companies have been working with NewTek. One of them, ***SunRize***, announced an audio switcher designed to work transparently with the Toaster. When you perform a video switch on the Toaster, this product will automatically perform an audio switch, as well. SunRize is also working with NewTek to port its Studio 16 sound software to the Flyer. (RS# 122.)

Prime Image had NewTek's support in producing **Passport 4000** ($6750), which, together with the Toaster, provides full production and graphics capabilities, with standards conversion in and out (the box is PAL, PAL-M, PAL-N, SECAM, and NTSC 4.43 compatible). The impressive, self-contained, self-powered unit also offers a transcoding TBC/synchronizer, digital-video effects, and IBM/PC-AT bus slots. Passport 4000 employs a "pass-through" interpolation technique that promises not to degrade signal characteristics, and operates with a 6+ field memory per channel. (RS# 123.)

Among other Toaster add-ons, ***DevWare*** demonstrated its **Crouton Tools** ($149.95, now shipping). This interface for controlling the Toaster also promises 150 new functions for the board. DevWare's **Atomic Toaster Catalog** ($49.95) offers information on buying and using Toaster-based products and should be ready in May. (RS# 124.)

Positron Publishing showed off **Dynamic Motion Module** ($179.95), which calculates keyframes and detects collisions to make LightWave objects involved move appropriately. (RS# 125.)

PreVue demonstrated **InterVue**, which comes in two flavors. The **Basic T-Bar** ($129) gives you hardware control over the Toaster's on-screen T-bar. **T-Bar Plus**, meanwhile, lets you select all 4096 possible background colors, and provides Take and Transition buttons plus three assignable buttons. Eventually, the company plans hardware replacements for all the Toaster's controls. (RS# 152.)

Y/C Plus, demonstrated its Y/C adapter for the Toaster, plus other products. The **VL-1A** low-pass filter promises to eliminate interference from improper NTSC composite encoding from S-VHS camcorders. The brand-new **VL-2 Y/C** is a Y/C version that banishes high-band "spurs" from the Y/C signal. The company's **KDP A-750** interface works with the Panasonic AG-750 and NV-510 decks, adjusting the trigger point from preroll start to edit point. The **KDP-440** interface works with Sony's RM-440, triggering effects at the edit point. (RS# 126.)

More and Better

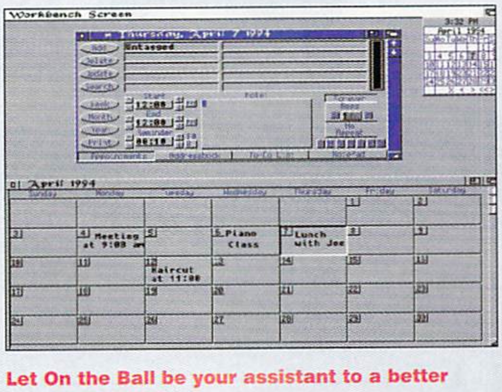
Also supporting the Toaster—and Centaur's OpalVision—is ***Scala's*** new **VE500**. The package combines all the multimedia authoring capabilities of Scala's MM300 with A/B roll video-editing software and a new RS-422 controller. The controller provides four ports and two GPI triggers; you can even use two cards for up to eight VTRs. The card supports most frame-

To locate the vendors of products mentioned, see the "Manufacturers'/Distributors' Addresses" list on p. 94.

News and New Products

DESKTOP ORGANIZER

Do you wish your workspace were the perfect "paperless office" that high-tech promises? **On the Ball** ($40, ***Pure Logic Software***) could be what you need—it's a calendar, address book, to-do list, and notepad all rolled into one. The calendar feature can organize your day, week, or month for you so you won't waste time fishing to find those crumpled appointment slips. With the software's address book feature, you can attatch reminder notes to a database of phone numbers and date-stamp your calls to help you keep track.



Let On the Ball be your assistant to a better organized office.

accurate decks, too, from S-VHS to D2, and it can control a slew of hardware (via Scala's EX extensions), including GVP's IV-24 display board, SunRize's AD516 sound board, laserdisc and CD-ROM drives, and more. It also provides scalable, antialiased character generation.

IC500, Scala's newest version of the InfoChannel multimedia network product, is a major upgrade, providing "the industry's first multimedia commercial insertion capability." It allows for automatic logging and invoicing of ads run on cable channels and so on. MPEG support comes in the form of software that encodes audio, video, and system data and can convert JPEG to MPEG. Improved authoring features should eliminate the need for external products. (RS# 127.)

Just down the aisle, ***Digital Micronics*** showed version 1.0 of its long-awaited **Digital BroadCaster**, the Motion JPEG-based nonlinear video system. (RS# 130.)

Fast Forward Video showed off its own random-access digital video recorder, **Bandit**, which supports Amiga and other systems. The stand-alone unit connects to your serial or SCSI port, uses JPEG for compression, and costs $5995. (RS# 132.)

PROMISING SIGNS

The giant Centaur and RGB booths stood side by side, seeming to symbolize their new agreement. ***RGB*** now bundles Centaur's OpalVision in a new turnkey system called **UniSuite**, which includes an A4000, a 350MB hard drive, 18MB of RAM, and, of course, AmiLink video editing, for $10,000. RGB expects that the new system, slated for release toward the end of '94, will find a huge market in Europe, given the PAL adaptibility. (RS# 129.)

Centaur has won praise for its OpalVision 24-bit display device and framebuffer ($695), and OpalPaint is widely regarded as the Amiga's best paint program. But the firm's tardiness in delivering modules has met with less enthusiasm, so Centaur seems determined to deliver better-than-expected results. The **OpalVision Video Processor module** (including the Roaster chip; $995), provides an elegant approach to creating impressive 3-D digital-video effects—and it comes with InnoVision's Montage character generator. The **Video Suite module** ($995), a rack-mountable audio/video mixer, switcher, and transcoder, has nine video inputs, and video in and out available simultaneously in RGB or Y/R-Y/B-Y, Composite, and S-Video. While Centaur is reluctant to state release dates, the modules did look close to completion. (RS# 128.)

DPS showed off a PAL-standard version of its popular Personal Animation Recorder; its version 2.0 software is imminent. (RS# 131.)

ASDG announced a new VP of Sales (ex-CBMer Rick Unland), and the licensing of its HIIP (Host Independent Imaging Protocol), a programming interface to enable image portability across platforms, applications, and formats. (RS# 133.)

Finally, lots of other Amiga developers, including reps from InterWorks, Warm and Fuzzy Logic (whose newest LightRave supports LightWave 3.1), DKB, Oxxi, Caligari, Anti-Gravity, Texture City, and Digital Creations roamed the show floor. So, while Amiga users missed the cancelled World of Amiga show this spring, we found plenty to chew on at NAB. ■ *—BG*

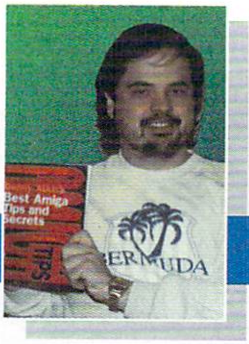


UPDATE SCAN

Learning about your roots? **Origins II** ($85, ***The Puzzle Factory***) is a database that will help you track your family's history. Once you've entered the data, you can list it by person, marriage, or parent and then generate reports to share with your whole family. Started a database with another genealogical program? No problem—you can import and export data between Origins and most other programs. You can even store picture files so that Origins can double as a photo album. The new version requires Workbench 2.0 or later, 1MB of RAM, and two floppy drives.

Want to add some pizzaz to your videos? **TV Text Professional 2.0** ($199.95, ***Zuma Group***) video-titling software now supports PostScript Type I, Intellifont, and QFont scalable typefaces and on-screen text sizing and stretching so you can create all kinds of effects for your text. It supports AGA and all graphics modes (including Super Hi-Res) except HAM. The program includes 25 scalable outline fonts. AmigaDOS 2.04 or later and 1MB of chip RAM are required (a hard disk is recommended).

BibleScholar 3.0 ($159.95, ***EasyScript***) features AGA support, an improved interface, enhanced editing functions, and more maps. It also supports new reference modules from EasyScript such as **The People's New Testament** ($74.95), which offers commentary and references for each verse. Another module, the **Treasury of Knowledge References** ($74.95), includes the new Topical Text Book, the Spurgeons' Catechism, the Puritan Confession, and other sources of interpretation. The upgrade costs $34.95. □



Denny on DOS

HINTS & TIPS FOR MASTERING THE OPERATING SYSTEM

By Denny Atkin

#1— Keys to the Shell

Welcome to a new *AW* column designed to help you make better use of your Amiga's operating system—including the Workbench, the command-line Shell, and the underlying files used by the OS and your applications. Over the coming months, we will explore both basic and advanced aspects of the OS.

Although some of the material covered in this column will apply to AmigaDOS 1.3, most will focus on AmigaDOS 2.04 and later. If you're currently using 1.3 or earlier, you really should upgrade your system to AmigaDOS 2.1. The Amiga 500 and 2000 can be upgraded to 2.1 simply by changing a ROM chip. (The common misconception that you also need to upgrade to the Enhanced Chip Set isn't true.) Adapter boards are even available that will let you plug a Kickstart 2 ROM into the venerable A1000.

Not only does AmigaDOS 2+ provide an enhanced Workbench and a more powerful Shell, but it also adds new capabilities to your system that can make your third-party applications work better. It's one of the best upgrades you can purchase for your Amiga.

To Shell and Back

This month we'll look at some ways to get the most out of the Amiga's command-line interface. Referred to by the acronym CLI in the earlier versions of AmigaDOS, it was significantly enhanced in AmigaDOS 1.3 and renamed the Shell. To open a Shell window, you can either double-click the Shell icon in the System directory on your Workbench disk, or take the mouseless route: Hold down the Right Amiga key and press E, and then type Newshell and hit Return. If you want to have the Shell always a double-click away, click once on the Shell icon and then select Leave Out from the Workbench Icons menu.

Unlike the CLI, the Shell gives you comprehensive controls for editing the commands you type. You can use the Cursor Left and Cursor Right keys (arrow keys) to move across the command line. Shifted, these keys move you to the beginning and end of the line, respectively. Especially handy are the Cursor Up and Cursor Down keys. Each shell keeps a history of the last 2K of commands you've typed. Pressing the Cursor Up and Down keys let you move through the command history list.

Once the command you want is shown at the prompt, simply press Return to execute it (or edit it first, if you wish). If you're looking for a particular command you've entered, you can type the first few characters of that command and then press Shift and Cursor Up (or the key combination Ctrl-R). The first command that matches these characters will appear at the Shell prompt. If that's not the command you're looking for, continue pressing Shift-Cursor Up until you find the match.

> **Quick Tip**
>
> If you want to close a Shell window, you don't have to type ENDCLI or ENDSHELL and press Return, nor do you have to reach for your mouse. Simply hold down Ctrl and press \ and the Shell will disappear immediately.

If you want to make a quick note to yourself, type a semicolon (;) to mark the current command line as a comment, and then type your note and press Return. You can then recall the note later by typing ; and hitting Shift-Cursor Up.

There are a number of key combinations that make editing recalled commands easier. Ctrl-W deletes the word to the left of the cursor, while Ctrl-U deletes everything to the left of the cursor. Ctrl-K will eliminate everything from the cursor to the end of the line; if you change your mind, pressing Ctrl-Y restores the deleted text. Finally, Ctrl-X will delete the entire line.

Short Clips

Another way to save typing is to take advantage of the clipboard support added to the Shell in AmigaDOS 2. Using the left mouse button, you can highlight a filename listed in the Shell by clicking on the first character and dragging the pointer across the filename. Then press Right Amiga-C to copy the filename to the clipboard. Now type a command, such as List, and hit Right Amiga-V to paste the filename after the command. Normally, the Dir and List commands do not list the entire directory name, but you can create a command that does by typing

```
ALIAS LS LIST [] LFORMAT
  %S%S
```

Now use the LS command when you want to list the entire path. This comes in handy if you want to copy and paste multiple filenames, perhaps to append them after the Delete command.

An Extra Set of Keys

Some commands, particularly long directory listings, will display more information than will fit in your Shell window. You can stop a listing with Ctrl-S and resume it with Ctrl-Q. However, typing any key will stop the scrolling, so often I simply use the spacebar to stop the scroll and Backspace to resume it.

If you want to issue multiple commands, press Ctrl-J instead of Return after each command in the sequence except the last. After typing the final command, hit Return; all of the commands will now execute in sequence.

If you're looking for an even more powerful command window, check out Wishful Thinking Development's WShell 2.0. This commercial Shell replacement adds better ARexx support, filename completion, a scrollback bar, and more—it's a must-have if you spend much time at the command line. ■

Denny Atkin is author of the book ***Denny Atkin's Best Amiga Tips and Secrets****. Send suggestions to him via e-mail at DennyAmiga@aol.com, or write to him c/o* ***AmigaWorld.***

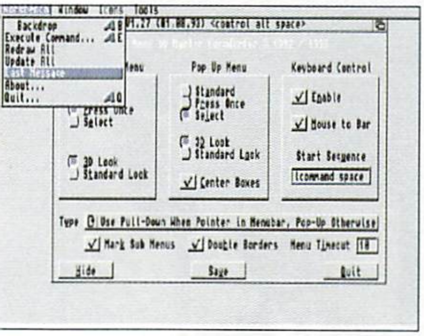


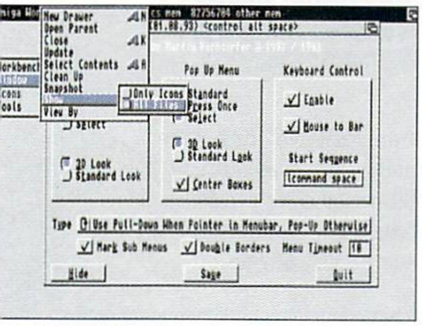
Prime-Time PD

ON-LINE SOURCES FOR FREELY DISTRIBUTABLE SOFTWARE

By Tim Walsh

Like one of Pavlov's dogs, I had conditioned myself to await patiently the opportunity to expand *AmigaWorld's* coverage of freely distributable software. That time has now arrived—with the debut of "Prime-Time PD." You'll see more in-depth coverage, more screen shots of Amiga PD programs, and, space permitting, occasional updates on happenings on the Internet, as well as on both established and emerging networks. Also, since few Amiga users stick only to the





Magic Menu lets you control both pull-down (top) and instant pop-up menus (bottom).

Amiga camps on the networks, this expanded column will give me the freedom to discuss topics beyond just the software offerings in the Amiga areas.

Magic Menu

To celebrate the new look of this column, it's only fitting I mention a program that gives your Amiga a new look. *Magic Menu* by Martin Korndörfer fits the bill. Recently updated to version 1.29, it remarkably improves the look and feel of your Workbench and virtually every program that uses Intuition menus. And unlike some screen utilities, Magic Menu is designed so that it does not severely hamper the performance of unaccelerated Amigas.

In a past issue, I noted that Silicon Menus is one of my favorite Amiga utilities. Wherever you position the pointer, that's where your menus appear when you press the right mouse button. Magic Menu works the same way—you no longer have to move the pointer to the top of the screen to access the menus. But Magic Menu holds an advantage over Silicon Menus because it offers more options and flexibility. It even lets you choose between standard, 2-D type menus and those of the increasingly popular 3-D variety. Simultaneously pressing the Control and Alt keys toggles currently displayed menus between 2-D and 3-D.

Magic Menu version 1.29 (an 108K archive) places an attractive configuration interface on the screen. Selections from its font-sensitive, hot-key activated control panel let you set up Magic Menu with numerous options. By pressing a couple of on-screen buttons, you select how pop-up and pull-down menus appear. (Pop-up menus are those created by Magic Menu that appear wherever the pointer is positioned on the screen; pull-down menus are commonly "pulled down" from the top of the Workbench.)

Complementing the interface is a program icon that supports a variety of ToolTypes entries, allowing you to set a number of Magic Menu parameters to your liking. The program's most redeeming quality, though, is the well-written, easy-to-understand documentation, which is available in AmigaGuide format. You can also find plenty of cross-referenced hot-buttons in the docs.

After months of using it, I can state with no uncertainty that all programs using Intuition screens work flawlessly under Magic Menu. The only exception I encountered is DeluxePaint 4.5 AGA, whose combination of custom screens and menu system won't allow the program to take advantage of Magic Menu. No big deal, really, as any Intuition menus multitasking in the background remain under Magic Menu control. Whether you are using Workbench 2.0, 3.0, or anything in between, Magic Menu seems to work like a charm.

And Furthermore . . .

While on the subject of screen utilities, *MousoMeter* by Wolfgang Breyha and Michael Matzl, is a little program found only in the AmigaUser area of CompuServe as of this writing. MousoMeter measures the "mileage" (actually the fractions of a kilometer) you accumulate by moving the mouse. A calibration program, a special Magic WB version, documentation in English and German, and an April Fool's prank accompany this archive.

In the process of getting MousoMeter to work, I discovered that I was lacking a library. I promptly downloaded *Magic User Interface (MUI)*, a $15 shareware program by Stefan Stuntz of MFR fame. MUI is a big (650K) archived file that adds a host of files for creating and designing various program interfaces, plus the Muimster.library required by MousoMeter. The demo version you download is slightly disabled, so pay the shareware fee and you'll receive a full working version from the author.

I would encourage anyone interested in creating program interfaces to get MUI and take a look at the examples. At the very least, you'll get some innovative ideas for new designs.

Network Voice Numbers

BIX
800/695-4882
617/354-4137

CompuServe
614/457-0802
800/848-8199

Delphi
800/695-4005

GEnie
800/638-9636

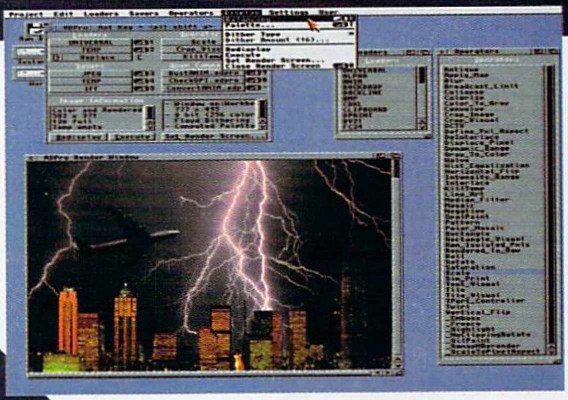
Portal
408/973-9111 ■

Write to "Prime-Time PD" c/o ***AmigaWorld*** *Editorial, 80 Elm St., Peterborough, NH 03458; or contact Tim through the Internet at "twalsh@bix.com".*

ART DEPARTMENT PROFESSIONAL VERSION 2.5

The Best Don't Rest





This screen shows just one of the many ways to configure ADPro's new interface.

Shown are the button interface with floating module lists and render window.

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- More image formats • More tutorials
- More image processing operators
- And the list just keeps on going

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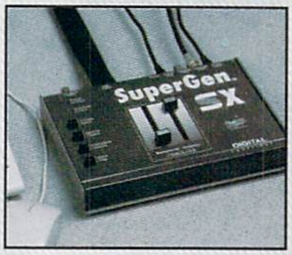
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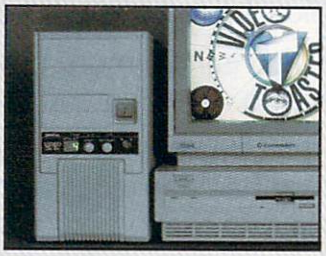
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The Video Slot Box is a revolutionary new mini-tower that expands any Amiga A2000, A3000, or A4000 to have four complete video slots, three additional PC AT bus slots (Power and Ground only) for compatible cards such as our Kitchen Sync TBC, room for two 5.25 inch half height devices and two 3.5 inch devices (You can use this room for SCSI hard drives, optical drives, flopticals, tape drives, or anything else that fits.), and a beefy 230 watt switching power supply.

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Video Slot Box

The slots in the Video Slot Box are complete video slots with all the capabilities of the video slot within the Amiga. You can place up to four video slot products into the Video Slot Box. A front panel selector lets you choose which product is actually in control of the video slot within the Amiga.

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DIGITAL CREATION

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The Reviews are in...

"The program is so fast and flexible that it makes its Amiga predecessors feel like the old Doodle! program on the Commodore 64. Nothing out there can match its feature set, and it's the one paint program I've used that's so fast that it never gets in the way of your creativity."
Amiga Computing, October 1993 (UK)

"Brilliance is now — leaving DPaint trailing in its wake — the best art package available for the Amiga. It's very hard to express why I'm so taken by Brilliance, there's just a feeling of 'rightness' about the way that it works."
C U Amiga, October 1993 (UK)

"Excellent! Brilliance is loaded with useful drawing and animation features, but it's not just the sheer number of tools on offer that impresses. Two other big points arise. First, the program is very easy to use, thanks to its intuitive, flexible and well thought-out panel system. The second major factor is Brilliance's speed. Even in HAM-8 mode, everything zips along beautifully quickly."
Amiga Format, October 1993 (UK)

"Brilliance is user friendly, doing an excellent job with nearly every function and option that it offers..."
AmigaWorld, December 1993 (USA)

"It is solid as a rock. Never have I known a first version of any program stand up like this or be so perfectly polished."
Amiga Shopper, December 1993 (UK)

BLUE CHIP AWARD

ADU APPROVED

"For many years, DPaint ruled the roost when it came to supplying incredible graphics power at an affordable price, but no longer. Brilliance has assumed centre stage and is now the Amiga's number one art package."
C U Amiga, January 1994 (UK)

"After using Brilliance for just a couple of days, I'm hooked. It is the only package to be released for the Amiga which can rival DeluxePaint for animation capabilities, and it is a class act."
Amiga Down Under Nov/Dec 1993 (New Zealand)

"It took a while, but Deluxe Paint IV has finally met its match. If you're looking for the best AGA paint program on the Amiga, look no further than Brilliance."
Amazing Computing, November 1993 (USA)

...Brilliance kicked Tut's Butt!

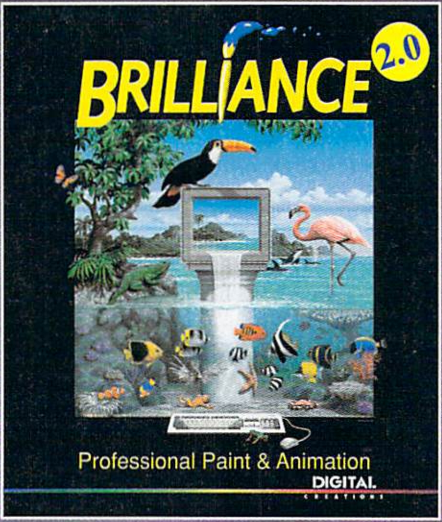




COMPARE! Deluxe Paint IV *Vs.* Brilliance

	Deluxe Paint IV	Brilliance
Overall Speed	Slow	Fast
Picture Size Limited By:		
Chip RAM	Yes	No
Total RAM	N/A	Yes
Number of Brushes		29
Number of Anim Brushes	2	9
Number of Screens	2	Lots*
Levels of Undo	1	Lots*
Levels of Redo	1	Lots*
Load/Save Paths	Yes	Yes
Flip Frames	No	Yes
Realtime Preview Mode	No	Yes
Full Screen HAM Gradient Fill	Slow	Fast
Max # of Colors Gradient Fill	16	30,000
True 24 Bit Editing	No	Yes
Load DCTV Pics as HAM	No	Yes
Max Animation Speed	30fps	99fps
Ground-up Design for AGA	No	Yes

* Limited only by total RAM



ANNOUNCING VERSION 2.0

Version 2.0 of Brilliance has been designed with productivty in mind. Several new features enhance this already powerful program. Features like *Flip Frames* that allows the animator to flip through drawings. *Rub Thru* that make compositing easier. *Load and Save Tween paths* enabling much longer and repeatable brush moves. Faster and more accurate Tweening. *True View* option for magnification. And much, much more.

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R E V I

Powerful image-processing software.

Art Department Professional 2.5

ASDG, $299
All Amigas.
2.0/3.0 compatible.
Hard-drive installable.
Not copy protected.
Accelerator recommended.
Minimum system: 1MB, hard drive.
Recommended system: 4MB, AGA or display card.

Get out your birthday hats—ADPro has just turned 2.5! ASDG's acclaimed image-processing program has donned a new party dress and slimmed down, for its bulky, lo-res custom screen has given way to a collection of svelte, style-guide-compliant windows on the Workbench screen. To top things off, there's nary an older ADPro 2.0 loader or driver that won't work under 2.5.

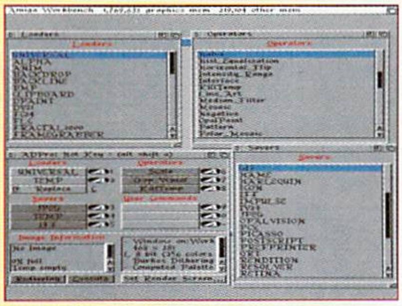
Spring/Summer Fashions

You can now select between two nifty front-ends and can accessorize ADPro to your liking. A button-driven interface combines an uncluttered window of just a few user-configurable buttons with separate tear-off menus for all the operators, loaders, and savers. ADPro is also now fully mobile, able to sport its main interface on any public screen. When on the Workbench, ADPro acts as an AppWindow—to load a file, simply drag it into ADPro. When it is elsewhere, it leaves an AppIcon and AppMenu item behind. The program is fully style-guide-compliant and Workbench 2.0/3.0-friendly; you can even modify its AppIcon image.

ADPro's strength has always been its ability to convert just about any kind of graphics-file format into another. It supports GIF, BMP, JPEG, FLC, Icon (.info), ANIM-5 and ANIM-8 formats, to name a few. The Professional Conversion Pack has been upgraded to include Silicon Graphics (SGI) and Wavefront formats, as well. But ADPro's modular design is what makes it a powerful tool. Modules provide support for Digital Processing Systems' Personal Animation Recorder, flatbed scanners, the Video Toaster, and an assortment of other hardware. The program also comes with utilities that disassemble and reassemble large files on Mac and PC floppies.

ADPro's display options give graphics-card owners reason to rejoice, too. The Execute and Redisplay buttons now can render directly to Picasso, Retina, EGS-Spectrum, and other cards as if they were Amiga displays. You may also render your images in a window on the Workbench or any public screen. If you like to see everything at once, try running ADPro atop FRED's (ADPro's Frame Editor) 256-color AGA screen while displaying your image in a window on the same screen.

While many people are drawn to ADPro for its file-conversion prowess, I find myself using it most often for automated file processing. Using FRED or Sentry (the software equivalent of an obedient robot), your Amiga becomes a remote-controlled graphics workstation. If you're rendering a 500-frame Caligari animation but don't have room for all those 24-bit images on your hard disk, don't worry: Sentry stands guard and uses Workbench 2.0's file notification to turn them all into JPEGs as they are created. Or you can use FRED to automatically resize, process, and animate a batch of FractalPro frames. Although ADPro, FRED, and Sentry use ARexx to work all this magic, you don't have to become an ARexx programming whiz kid; ADPro includes dozens of plug-and-play scripts for most common tasks.



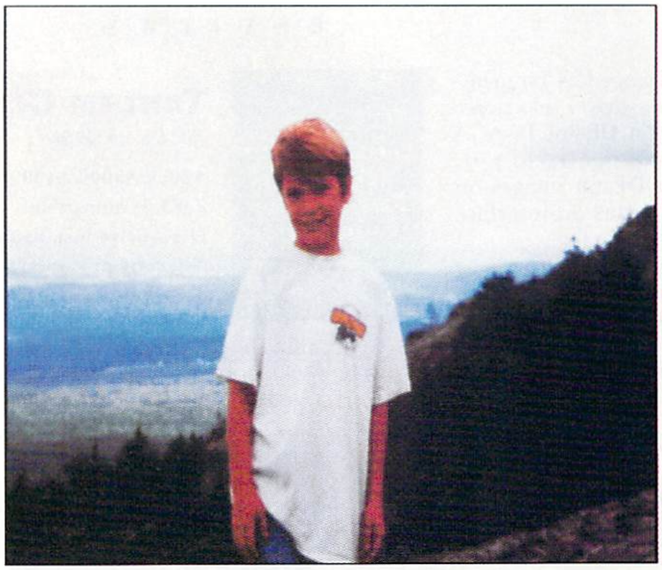
ADPro 2.5 does away with the clunky, oversized interface of previous versions.

To locate the vendors of the products reviewed, see the "Manufacturers'/Distributors' Addresses" list on p. 94.

Composite Materials

ADPro's compositing tools have improved to the point that I'd now call them formidable. Not only

W S



can you use any image format as an alpha channel, but you can specify a range of colors as transparent—an increasingly important feature in these days of multimillion-color images. An example of how nifty ADPro is to work with is the fact that I've taken to using the DPaint loader to create alpha channels on the fly. I save the background image out to DPaint, turn it into a matte, and load it back into ADPro. It's seamless and fast—just the ticket to keep those creative juices flowing. The compositor is now housed on a high-resolution screen and looks much like the visual operators found elsewhere in ADPro. You can even nudge the overlay image around the screen with the cursor (arrow) keys for precise control.

All is not rosy with ADPro, however. ASDG has made great strides toward improving the user interface, but the visual operators are still a bit spartan. You can enter colors only by typing numbers, and there's no palette box to display the colors you've concocted. Also, there's no undo or zoom, and FRED is still a tad quirky. For instance, the program hiccups and promptly aborts unless filenames have the correct extension. This problem is made worse because FRED runs only in 256 colors on AGA machines, resulting in sluggish responses.

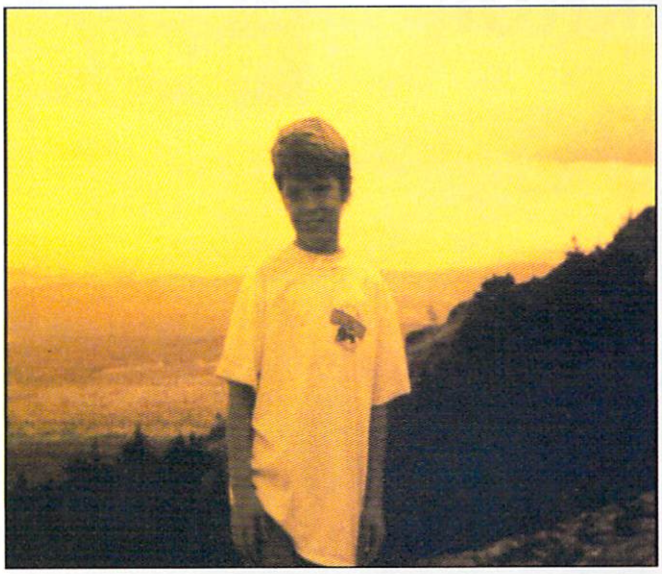
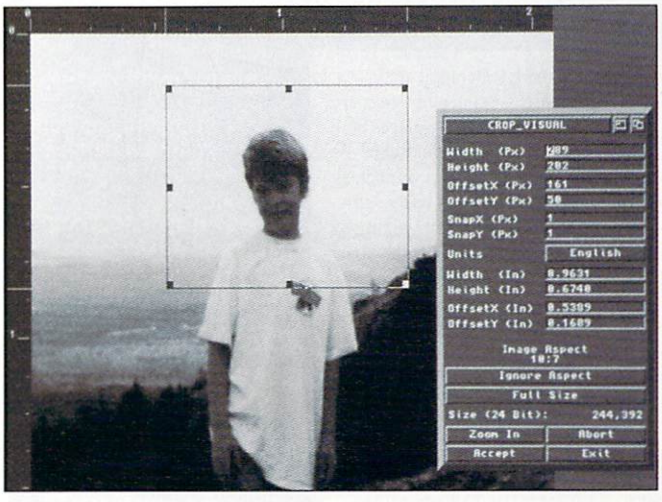


Image-Processing Warfare

Gone are the days when ADPro was the only kid on the image-processing block. It excels in most areas, but for heavy-duty image processing, you may want to complement it with Black Belt's Imagemaster R/t or GVP's ImageFX. Imagemaster R/t has hundreds of processing tools not found in ADPro, and it can process regions of an image, instead of having to work with the entire image as does ADPro. I'd recommend buying both ADPro and Imagemaster to capitalize on their individual strengths.



ADPro 2.5 offers a multitude of capabilities, image-processing options, and tools. (Top) Display 24-bit images from any number of graphics cards. (Middle) "Antique" your images for an old-fashioned look. (Bottom) Zero in on small sections of an image with its elaborate cropping editor.

No other package, however, matches the depth and breadth of ADPro's file- ►

conversion tools, enhanced 24-bit printing, or flatbed-scanner-driver selections. ADPro also includes a DPaint IV-AGA patch that upgrades version 4.5 to 4.61, and lets you modify DPaint images on the fly. Finally, v.2.5 has an interface other programs would die for.

All things considered, ADPro is the kind of program that, while slightly imperfect, continues to define the Amiga itself. I can hardly imagine the Amiga without Art Department Professional.

—Dave Johnson

Combination CD-ROM and IDE hard-drive controller.

TANDEM CONTROLLER

Alfa Data, $139.95

A2000/A3000/A4000.
2.0/3.0 compatible.
Hard-drive installable.
Not copy protected.
Accelerator compatible.

Installation: **Moderately easy.**
Minimum system: **2MB.**
Recommended system: **4MB, A4000, hard disk.**

To paraphrase Thomas R. Marshall, what every serious Amiga user really needs is a good, low-cost internal CD-ROM drive, preferably one that doesn't already have a Mac or PC attached to it. When Alfa Data's new Tandem IDE/CD-ROM Controller and Mitsumi FX-001D CD-ROM drive arrived, that's what I got. More than just another pretty controller card, the Tandem punted my A4000/040 squarely into the age of multimedia with dual-speed CD-ROM capabilities.

CD USER IN PARADISE

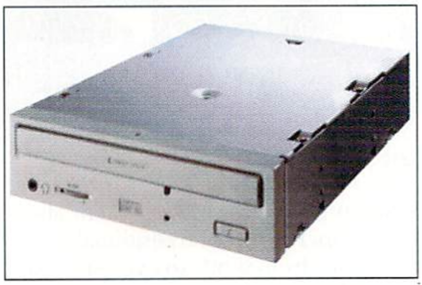
The Tandem (imported from Germany) is a pint-sized combination IDE/CD-ROM Zorro II/III controller card of admirable quality. The package includes an IDE-type cable, a disk's worth of software, and a tiny English/German manual that is surprisingly helpful. The Tandem's "combination" designation implies that you can add another IDE-type hard drive to your system, along with a CD-ROM drive. It's up to you to supply the CD-ROM drive, and you're limited to three high-quality Mitsumi units available from Alfa Data—two single-speed (designated the LU-005S and FX-001S) and a dual-speed (FX-001D, $429) that offers better overall performance.

With the controller and the FX-001D in front of me, next came the real challenge: installing them in my A4000. The controller slid like any other half-length card into a vacant slot, but installing the drive unit in the top 5.25-inch bay proved a ten-minute exercise in skinned knuckles, acquired mostly in removing the virtually inaccessible security-switch locknut.

With the front cover off, wedging the unit into the top bay requires no special skills, but the wire harnesses to the CD-ROM drive rest disturbingly close to the power supply's fan. Once you've packed all the pieces into place and completed the connections, the drive extends an unobtrusive 1/4-inch and is closely color-coordinated with the computer. I was particularly smitten by its tiny green activity light—a perfect match for the A4000's power light.

Violent system crashes were the order of the day with most of the 1991-vintage CDTV titles I tried, but those problems could be addressed through judicious experimentation with Degrader and booting the A4000/040 system with the original chip set. To perform functions

beyond viewing images or loading text from Mac- or PC-specific CD-ROMs, you'll need a hardware emulator. Performance-wise, I recorded read speeds of about 290K per second from an ISO-9600-formatted CD in the drive—respectable, but not even one-third as quick as the A4000's built-in IDE drive



Mitsumi's dual speed FX-001D CD-ROM drive works perfectly with the Tandem.

(over 1MB/second). DiskSpeed 4.2 did not recognize the CD-ROM as a valid device, but SysInfo 3.23 did.

Cue the Music, Maestro

Accompanying the controller are four utility programs: EjectCD, KillDEV, ForcePhotoCD, and PlayCD. EjectCD places an open/close button on the Workbench, while KillDEV removes the CD driver from the mountlist. ForcePhotoCD is unnecessary unless, to quote the documentation, you're using "very early LU-005S drives," which apparently experienced problems using PhotoCDs. To an FX-001D or FX-001S, PhotoCD's perform as well as any other CD-ROM.

When you launch PlayCD, the CD-ROM drive is disabled from other activities. Plug a set of headphones (Radio Shack Micro 36s work quite nicely) into the micro jack on the front of the Mitsumi and listen to your favorite tunes on music CDs without hampering your Amiga's overall performance.

In summary, the Tandem/Mitsumi CD-ROM combo is a worthy hardware addition. It's inexpensive, installs with minimal fuss, performs admirably, and is your ticket to the exciting world of CD-ROMs. With the right combination of hardware (A4000) and software,you may find that a few CD32 titles might work, as well.

—Tim Walsh

Scala MM300

***Scala*, $399**

All Amigas with ECS or AGA support.
2.04/3.0 compatible.
Hardware dongle copy protection.
Accelerator compatible.
***Minimum system:* 1MB chip RAM, 2MB fast RAM, hard disk.**
***Recommended system:* Accelerator, 4+MB fast RAM.**

Multimedia authoring and presentation software.

In the past few years, Scala's crisp, distinctive backgrounds and unmistakable displays seen in kiosks and cable TV stations have helped the company win over believers and skeptics alike. Now, its revamped presentation weapon—Scala MM300—has the potential to promote the pioneer of multimedia even further. The MM300 package builds on its predecessor's reputation for power, flexibility, and simplicity of operation by adding a veritable laundry list of features, most of which are more incre- ►

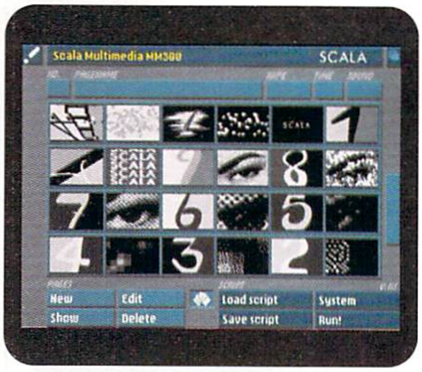
mental than revolutionary in nature.

Absolute Power

As with earlier incarnations, Scala MM300 allows users to create high-quality, professional, self-running or interactive presentations that combine IFF pictures, text, video, sound, and music. Scala EX, the part of Scala that controls external devices, can directly control external laserdisc players, CDTV, Xapshot, genlocks, and MIDI instruments.

Though Scala can create stand-alone presentations, it is mainly a multimedia package. It lacks the program-building implements of a software-creation tool like CanDo, but instead creates presentations packed with video, audio, and transitional effects. Via powerful color controls, you can remap IFF images to a wide variety of palettes. Text handling is a snap, using any mix of Amiga fonts and styles. Scala can even display analog DCTV pictures, though the incompatibility in signals prevents the addition of text.

Besides displaying pictures, Scala



MM300's interface—clean and lean.

MM300 excels in whisking them about with a superb array of transitional effects that range from subtle to explosive. New wipes (bringing the total to more than 100) now look dazzling in AGA modes. A new "Automagic" feature instantly turns any screen object (brushes, text, structured-drawing items) into buttons.

You can add Amiga Soundtracker MODs and sound effects simultaneously as music plays. There are basic controls for manipulating sounds in a variety of sound formats—from IFF samples and SMUS to GVP's 8-bit DSS format. Long sound samples won't affect video presentations, either.

Video Star

The crucial new benchmark of presentation software is video. Scala uses a proprietary 32-bit animation format called ANIM-32 to play back continuous digital video read in real time directly from the hard drive. Videos and animations can be as lengthy as data-storage space permits. An accelerated Amiga with a fast hard drive is needed, but you get real-time video power in return.

In order to stay ahead of the rest of the video pack, Scala MM300 beefs up its already robust set of animation tools with SMPTE timing codes (to sync with video) and AnimLab, a powerful animation converter. AnimLab creates ANIM-32 files from the old Scala video format, ANIM-5 (DPaint), and ANIM-8W and -8L (Brilliance). AnimLab rapidly converts video files between NTSC or PAL resolutions, formats, and palettes. It can even turn animation files into separate frames of stills, give them smoother playback, and handle files too large to fit in RAM.

New Knickknacks

New features in the MM300 make an already professional environment even better. Picture handling is vastly improved, with better antialiasing, improved palette calculation, 24-bit support, Floyd-Steinberg dithering for fast picture and

brush remapping, easy picture and brush resizing, basic structured-drawing tools, and better wipes and text crawls. The work environment is more convenient, with thumbnail images on file requesters and instant font-requester loading. File formatting has been improved to allow the transparent loading of multiple file formats, like GIF and PCX. You must purchase each formatting module separately, but no price has been set.

Scala MM300's work environment makes building multimedia applications a breeze. The nonstandard interface is well thought out, with a clean, uncluttered look. The 350-page manual offers plenty of reference material, clear tutorials, and a full chapter on scripting and ARexx. The brief index, however, is buried between sections, and some images don't accord with the text.

The familiar hardware dongle for copy protection imposes a burden on some users. Also, while the library of art, fonts, sounds, and animation is superb, it is rather diminutive. Now that many PC titles offer full CDs of multimedia resources, Scala needs to close the only remaining gap—although to its credit, the resources it does have are gems.

I have evaluated a host of multimedia and presentation environments on other computers, and the MM300 outperforms most of them. Its power, flexibility, and price continue to give the Amiga a distinct multimedia advantage.

—Daniel Greenberg

ALADDIN 4D 3.0

***Adspec Programming,* $499**

All Amigas.
2.0/3.0 compatible.
Hard-drive installable.
Hardware dongle copy protection.
Accelerator compatible.
Minimum system: **2MB and math coprocessor.**
Recommended system: **Hard drive, accelerator, 4MB, 24-bit display board.**

Powerful 3-D rendering package.

Like so many 3-D modeling and animation developers, Adspec Programming realized that no matter how many bells and whistles were packed into its premier rendering program, Aladdin 4D, there would always be room for new functions. Version 3.0 is a modular rendering package that makes good use of external modules. We'll take a look at Aladdin's more prominent attributes.

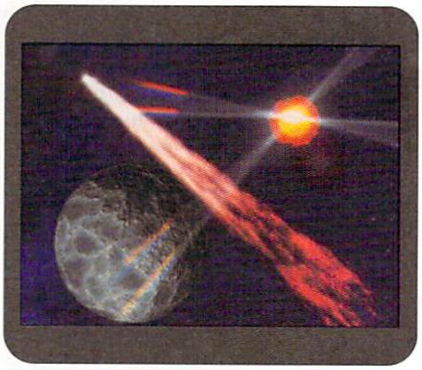
FROM THE BEGINNING

Aladdin's polygon editor lets you look into 3-D space. Unlike packages such as Imagine and LightWave, Aladdin does not use a tri-view editor for point and polygon manipulation. Instead, you work in one 3-D space where Aladdin's "virtual" camera controls the three primary views associated with the editor (called flat views, for the x, y, and z axes). Aside from the ability to control the perspective of your view by moving this virtual camera, Aladdin also supports an isometric view, which displays your drawing in nonperspective mode—useful for the precise placement of polygons.

The program features a point-based editor, where polygons are usually con- ►

structed by setting and moving points. Creating rendered objects is accomplished in several ways. You can draw freehand, create primitives (such as planes, spheres, and tubes), or use drawings from programs such as ProDraw and import the resulting EPS (Encapsulated PostScript) files into the editor. While many 3-D artists use polygons to construct objects, Aladdin's 3-D spline capability lets you draw smooth curves, then translate the points into three dimensions or onto other standard polygons.

A plethora of tools lets you edit, move, manipulate, and otherwise control the environment within the editor. Modularity is lifted to a new level by including what Adspec calls external tools or gadgets. These stand-alone programs that exist outside Aladdin are launched from within the program. The more interesting of these external items are modules to extrude, sweep, stretch, scale, conform, explode, or twist polygons. Using external tools facilitates updating existing tools or adding new features to



Aladdin 4D 3.0 lets you use all the latest techniques in lighting, texturing, and special effects in your 3-D rendering.

Aladdin, since a full program update isn't required.

ANIMATION EFFECTUATION

Aladdin supports basic timeline and keyframe animation techniques, and moving objects though your animation can be as simple as drawing a path and assigning the object to it. But on top of this, the program controls the way your objects look across a span of time through the use of control splines (Csplines), which control nonlinear effects in an animation. Csplines can direct the rotation, scaling, texture attributes, transparency, and many other attributes for each object. You can render animations in any resolution supported by your machine and save them in standard ANIM-5 format.

Grouping models together does not necessarily make for photorealistic pictures or animations. Texture mapping, special effects, and lighting control distinguish truly gorgeous scenes from the ho-hum. Aladdin's built-in or bitmapped texture options, true lens flares, and gas effects let talented non-LightWave 3.0 animators create opening scenes of such shows as *Star Trek: Deep Space Nine* or *Babylon 5*. Procedures that simplify the creation of interesting wave effects, useful for simulating rippling water, are also available. Lighting options let you achieve the right look for your scene. You can control lights according to color and strength and even assign them to a path in an animation. And if you don't mind the extra rendering time, you can set up lights to cast shadows or to affect highlights on objects.

Aladdin 4D supports all Amiga modes (including AGA), DCTV, and a host of 24-bit cards such as Retina, Firecracker, and OpalVision. While it is not a true ray-tracing rendering engine, the gouraud or phong shading effects are stunning, especially in 24-bit mode.

Depending on the complexity of a scene, the rendering times in Aladdin can range from quite speedy to excruciatingly slow.

While Aladdin is indeed an outstanding program, it's not a true ray-tracer, so don't throw away your Imagine 2.0 yet. Since Aladdin can only trace shadows, you can't achieve refraction or object-reflection effects, although you can simulate some effects such as chrome by means of bit- and texture-mapping. Be warned that the learning curve for those used to conventional tri-view programs can be quite high.

A Manual Look-See

The manual is divided into two parts: an extensive tutorial and a tool/command reference. If you invest the time and practice, the manual explains just about everything you need to use your creativity. A quick-start tutorial has you creating simple animations within a few minutes.

I would, however, like to see more high-end effects in a package of this magnitude. For example, there doesn't seem to be an easy way to achieve such dynamic effects as magnetism and gravity. Also, Aladdin does not support collision detection or inverse kinematics (which is gaining popularity in high-end rendering programs). Moreover, since the program generates splines, its lack of support for density-based modeling tools or lattice and mesh effects might be an oversight. But I'll temper this bit of disappointment by saying that no rendering program can include every possible option. Moreover, such effects could seriously impact rendering times.

The uninitiated may be daunted by Aladdin 4D's apparent complexity, but Adspec's customer support and its quarterly newsletter (which includes a disk) offer outstanding help and guidance. At this writing, Adspec is allowing users of other 3-D packages to buy Aladdin 4D at roughly half price. Call Adspec (216/337-3325; FAX 216/337-1158) to learn how you can take advantage of its special offer. So, whether you are new to the 3-D world or looking to expand your Amiga graphics arsenal, you can't go wrong with Aladdin 4D.

—John Ryan

Megalosound

Oregon Research, $59.95

All Amigas except the A1000.
2.0/3.0 compatible.
Hard-drive installable.
Not copy protected.
Accelerator compatible.
Installation: **Easy.**
Minimum system: **1MB, sound source.**
Recommended system: **Hard drive and/or second floppy, extra memory.**

Entry-level, 8-bit sound sampler.

If an eight-bit stereo sampler and editing package that records at rates up to 70 KHz in mono and 39 KHz in stereo sounds good, the price—just $59.95—is downright enticing. Bundled with a complement of software utilizing cut-and-paste features, Megalosound samples IFF, 8SVX, and RAW formats directly to your hard disk, so only a meager amount of RAM is needed for even lengthy sound samples. You can also add special effects to the samples.

Continued on p. 68.


VIDEOTOASTER
4000
FULL USER COMMENTING AND EDL MANIPULATION
2 A REEL0001
00:01:09:26
PLAYING
00:01:03:12
00:01:18:00
00:00:06:18
3 B TAPE3245
00:11:49:00
SEARCHING
00:11:49:09
00:11:55:27
00:00:06:18
001
001
R
STOPPED
00:00:05:13
00:00:12:01
00:00:06:18
A1
A2
A3
A4
PREVIEW
PERFORM
SPLIT
REVIEW
WIPE 032 125
<TO> B
WIP
CG
KEY
FS
023 010
ENABLED 00:00:06:18
EE
A
B
REC
ALL
SETUP
IN
OUT
DUR
XFR
TRIM
GO TO
CLEAR

VIDEO EDITING ROUNDUP

The Fundamental Things Still Apply

A kiss is still a kiss—and cuts, inserts, and transitions are still the stock-in-trade of the video editor. While the vanguard awaits the advent of nonlinear editing, the rest of us can benefit from this roundup of the latest offerings from among more traditional video-editing systems—both consumer-level and pro.

BY GEOFFREY WILLIAMS

We are at an interesting crossroads in the world of video editing. The future, as most people know, lies with nonlinear editing (i.e., being able to play your source tapes into your computer and store them anywhere on your hard drive, and to then play them back and edit them in any order—from disk, not from videotape). Unfortunately, the technology is not quite here yet—at least at any kind of reasonably affordable price.

So for Amiga users who want to do video editing now, we're still going to need traditional editing tools. While this may seem a bit primitive to those visionaries contemplating the dazzling promises of tomorrow, for the rest of us there are any number of solid products to keep us going until then.

Before we look at these, however, let's briefly ►

ILLUSTRATED BY JERRY BLANK

cover a few editing basics. Video editing has always been somewhat problematic. Film was easy: You just cut and spliced it all together. With video, however, everything must be planned out in advance, because once you have recorded onto your master tape, you cannot insert additional video without erasing part of what is already there.

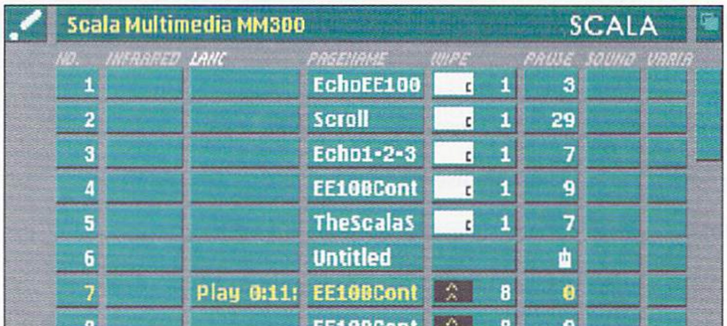


Video editing breaks down into two basic types. In ***cuts-only*** editing, you record from one VCR to another. With ***A/B roll*** editing, however, you use two VCRs for source material, which you then record onto a third deck. The latter method allows you to do such things as Toaster transitions between video segments; it is also faster, as one deck can be cueing up to the next segment while the other deck is playing.

Fortunately for Amiga users, the current selection of traditional video-editing systems is quite diverse. We'll examine a representative sampling both of basic consumer-level editors and state-of-the-art pro systems. Finally, we'll take a look at a few products that will even give you a taste of nonlinear editing. *(To contact the developers of products covered here, consult the "Manufacturers'/Distributors' Addresses" list on p. 94. Also, see the "Video Editor's Glossary" on p. 25 if there are terms you are not familiar with.)*

Consumer-Level Editing

THERE ARE SEVERAL video-editing systems designed to work with consumer-level editing decks rather than the more expensive industrial and professional ones. They range from the very simple to the quite capable, although even the better ones often may still lack the features an experienced video editor would want. They all work much the same way. The play-back VCR, usually a camcorder, is controlled though a LANC (or Control-L) port or a Panasonic 5-pin port, one of which is generally found on most consumer and prosumer camcorders and VCRs. The record VCR is controlled though an external programmable infrared controller, which means that it will work with almost any VCR. This method is not highly accurate, but acceptable for non-demanding tasks where a second or two is not critical.



When you edit with Scala Echo, you use the Scala MM300 interface. At bottom, Echo's LANC control panel sports VCR-like buttons that control the source VCR.

Video Director
Gold Disk
$199.95

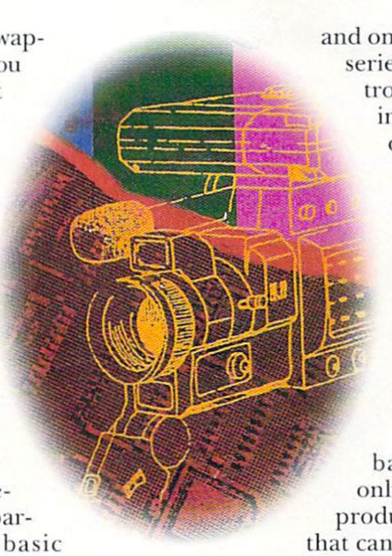
Since the developer has left the Amiga market, this product is now an orphan and you won't see future upgrades or support. It is a very simple program, lacking such things as support for ARexx or multitasking. It can display a picture if you have a genlock—and it will directly control Digital Creations' SuperGen 2000S—but you can't use it to play animations or sounds or to show anything but standard IFF pictures. It lets you make a list of clips from various tapes and record them, either through audio and visual cueing or automatically if you have a source deck with a LANC port. The control cable plugs into the serial port.

Scala Echo
Scala
$199

The Scala Echo EE100 is an add-on product for the Scala MM300 (see this month's "Reviews") or InfoChannel IC500 multimedia programs. As an editing system it is quite simple, but combined with the full power of Scala, it offers a lot of capability. The control cable is similar to the one for Gold Disk's Video Director, providing both LANC and infrared control from the serial port. Instead of working with a list of video events, however, you use the Scala interface, where record and play events are a part of an entire presentation. This makes it very easy to record Scala presentations to tape along with inserted video clips. You can also use its infrared capability to control other infrared-controlled devices such as a CD player or laserdisc player from within a presentation. You set in and out points by using the VCR-like buttons of the LANC control panel to control the source VCR.

MediaPhile
Interactive MicroSystems
$250 (software only)

The MediaPhile Desktop Video System is an editor of significant ambition and capability. Interactive MicroSystems has been improving it since 1986, and over time it has developed into a very unique product. It



controls not only LANC and JVC swap-port-equipped decks, but also decks you would not normally be able to use at all; in addition, you can upgrade it to control industrial-level decks with RS-422 ports.

Unlike Video Director and Scala Echo, MediaPhile can perform A/B roll editing—via Interactive's standard serial edit controller ($150), which connects to the LANC ports of your decks and uses the Amiga serial port. For decks that do not have a LANC port, the company also offers a universal tape controller ($150) that connects internally to any deck and keeps track of tape-motion pulses. The device uses the parallel port. Interactive provides basic instructions on using it with more than 45 popular decks. (The company will also install it for you in any deck.) The developer also offers an industrial controller ($150) for RS-422 decks, but for multiple decks you will need a serial-port expansion card. Keep in mind, also, that to make use of infrared control in a fully multitasking environment requires using one of the Amiga's audio channels.

MediaPhile hardware can be used with Gold Disk's Video Director, Future Video's EditLink, and even the Nucleus Personal Single Frame Controller (which lets you control decks with RS-422 ports).

Even with decks you might never conceive of using for editing, MediaPhile offers remarkable accuracy. The significant feature here is its capability to write time code directly from your Amiga's audio output to the tape—no additional hardware is required. For many decks, near frame accuracy is possible, with the worst case being +/– 5 frames for decks that have only tape-reel pulses. Using time code will mean losing one of your tape audio channels, so Interactive has also provided another method. MediaPhile's "no stops" option keeps the tape head in constant contact with the tape, so that it employs pause and fast-play modes instead of making you stop to use the normal fast forward or rewind. This is a lot slower, but it provides much more accuracy.

The included edit decision list (EDL) processor is full featured—letting you preview edits before actually making them, do audio and video inserts, and perform assemble and insert editing. Its script commands allow you to control the SuperGen 2000S and the Video Toaster, to make use of ARexx and execute programs, and to automate MediaPhile actions. There is a lot of power here and many unique features that make it worth serious consideration.

EditLink
Future Video
$595–1295

For many years now, Future Video has been making editing systems for the Mac, PC, and Amiga. The company currently offers several versions of its EditLink controller, ranging from the lower-cost EC-1000 ($595), which provides two-machine control and one GPI trigger, to the 3300 ($1295) series, which has three-machine control and two GPI triggers. Packaged in attractive black cases with numerous status-indicator lights, both can read Hi8 RTC time code, and each can be expanded to read SMPTE time code, too. EditLink controls the VTRs through Control-L, Panasonic 5-pin, or RS-232 ports, and it is accurate to within +/–1 frame on low-end industrial-level decks using time code. Toaster control is provided through a GPI trigger.

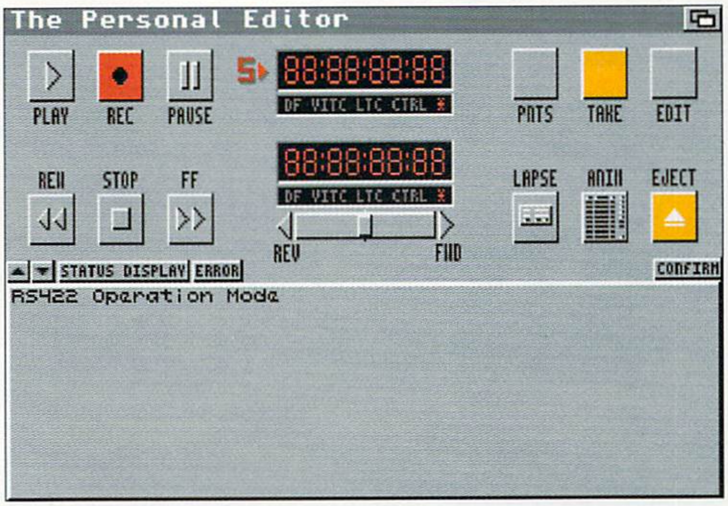
The editing software is quite basic—controlling single events only. There is, however, a third-party product, **CyberEdit** ($395, ***CyberCall***) that can add more sophisticated edit control to EditLink. The professional version ($595) includes A/B roll editing capability that allows you to perform both assemble and insert edits, as well as to control the Video Toaster (including the display of CG pages). As mentioned earlier, you can also control EditLink using MediaPhile.

Professional Editors

THE SYSTEMS BELOW work exclusively with higher-end decks in the industrial and professional classes.

Personal Editor
Nucleus Electronics
$645

From the makers of the Personal Single Frame Controller, the first product to make single-frame recording affordable, this is a low-cost cuts-only editing system for frame-accurate decks. It offers all of the Personal SFC's single-frame animation capabilities, as well as the ability to control two decks that have RS- ►



The Nucleus Personal Editor can provide you with precise control over two RS-422 frame-accurate decks with internal time code.

422 ports with internal time code. In addition, it can display IFF pictures and Toaster Framestores. It also provides direct control of Video Toaster transitions (unlike the more limited GPI triggering), and future versions promise support for ChromaFX and CG pages.

The Personal Editor also has a two-way ARexx port allowing it to control, and be controlled by, other programs. It also supports pseudo A/B roll editing (see Glossary), as well as being the least expensive way to control RS-422 frame-accurate decks.

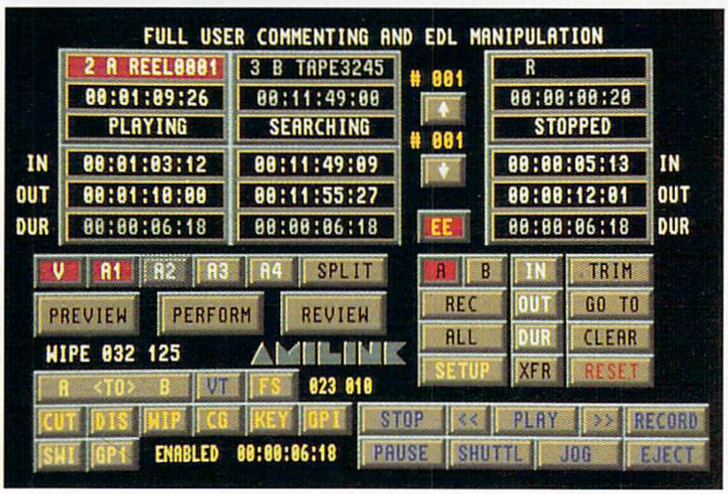
Because it is a brand-new product, by the time you read this Nucleus is likely to have added many other new features to it, as well. The Personal Editor represents excellent value as a low-end professional editor.



AmiLink Professional
RGB
$3630

RGB produced the first professional editing system for the Amiga, and AmiLink has only gotten better over time. For experienced editors, the AmiLink Professional, combining optional, well-implemented Toaster control with its "Pod" feature (which offers an external control panel with a jog/shuttle dial), is a dream system. It has the features you would expect from a high-end system, including: control over 16 source and 4 record decks and expandable up to 51 GPI triggers per edit; control over industry-standard audio mixers; a complete EDL that can save in CMX 3600 format; and the kind of stability that comes with a system that has been around awhile.

AmiLink also has the ability to launch ARexx scripts and programs at an edit point. And, unlike all of the other systems described, which tie up the serial port, it comes on an internal card.



AmiLink Professional is a premium system offering such niceties as animation control for single-frame recording and complete ARexx support.

Beyond solid edit control, AmiLink has a lot of nice extras. It offers built-in animation control for performing single-frame recording. It can be completely controlled though ARexx. It provides useful utilities, including a time-code calculator. And, it also has a detailed, well-organized manual that explains a lot of the basic teminology and does not assume you already are a consummate video expert.

All of this comes at a price, though. Even the entry-level AmiLink/CIP system that controls decks with LANC ports is quite expensive ($1795). The Professional version, which uses the industry-standard V-LAN for deck control, will set you back an additional $1835. If you can afford it, this is a great system.

Nonlinear Editing

WE ALL WANT it, but the technology is not quite here yet. There are, however, several products available now that in one form or another deliver on some of the promise of nonlinear editing. Keep in mind that nonlinear editing requires massive storage space and processing power to store all of that digitized video and audio and to move it around the system.

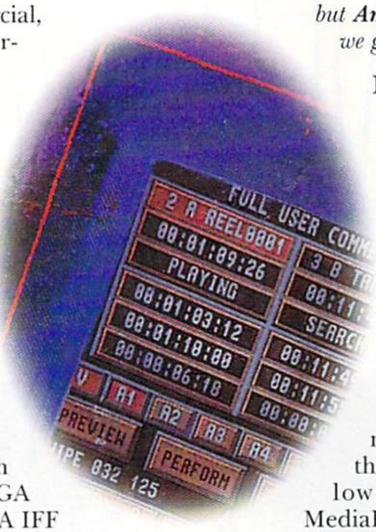
Digital Broadcaster 32
Digital Micronics
$3349

One of the first nonlinear editing products to be announced, Digital Broadcaster 32 is now shipping (version 1.0 was shown at the National Association of Broadcaster's convention early this spring). It is not in wide distribution, however, and *AmigaWorld* has yet to test one. According to the developer, it has not been made available for review because it is not yet able to do audio and video at the same time. Digital Broadcaster 32 plugs into the Zorro III bus of the Amiga 3000 and A4000, and it supports component, S-VHS, NTSC, and PAL inputs and outputs. It offers full editing capabilities with a number of transition effects, and it supports Motion JPEG. Until we get our hands on a unit, though, we can't tell you much more.

Personal Animation Recorder
Digital Processing Systems
$1995

PAR is not really an editing system at all, but you can use it along with the same company's Personal TBC-IV ($999) to record video to its dedicated hard drive (newer Micropolis drives let you digitize incoming video at the highest-quality setting). You can then cut and paste sequences together, or even trigger separate segments from a multimedia program. Synchronized 16-bit audio is possible using SunRize's AD516 audio digitizer. While you don't have a convenient editing front-end to work with, it would not be all that diffi-

cult for you to put together a commercial, ready to go, and even make several versions using the same source material. The quality from the PAR board is extremely good.



MovieMaker
Interactive Video Systems
$895

After showing it as a demonstration for years, IVS finally released its MovieMaker software last year. It is not a true nonlinear editor because there is no convenient way to get video frames into it in the first place. The source material should be in separate DCTV frames (although MovieMaker can also play back AGA frames at a slower speed, or non-AGA IFF frames of lesser quality). It works fine for animations and computer-generated imagery, and it even has 16-bit synchronized sound capabilities and its own digitizer. You might also want software capable of editing 16-bit IFF sound samples, though, as the program's audio-editing features are quite primitive. MovieMaker requires a dedicated hard drive, and it works best in the Amiga 3000. Getting full speed out of complex moving images requires a little effort, but it is possible to produce quite impressive results.

Editor's Note: *Readers looking for information on Pride Integrated Video Systems' PIV-2001 should note that the product is currently off the market as a result of certain legal proceedings. No further information is available at this time, but* ***AmigaWorld*** *will report any information we get that will impact readers.*

FINAL CUTS

With any of the editors presented in this article, it is wise to contact the manufacturer before you buy to make sure that it supports the VTRs you currently have and those you plan to add in the future.

As for recommendations, if you want a fully professional editing system, the choice is RGB's AmiLink. For an inexpensive, cuts-only editing system for pro machines, your best choice is clearly the Nucleus Personal Editor. On the low end, I'd have to choose the MediaPhile system, as the other systems do not come close to offering true video-editing capabilities. Although I did not get a chance to actually work with CyberEdit in conjunction with Future Video Product's EditLink, I believe MediaPhile is still the better value. A CyberEdit upgrade was underway at the time of this writing, though, so stay tuned for a review. Stay tuned also for details on NewTek's Video Flyer (a nonlinear editor designed for use with the Toaster) and on Scala's additions to its video-editing lineup! ■

Geoffrey Williams, director of Creative Business Presentations, is a frequent contributor to computer-video publications. Write to him c/o ***AmigaWorld****, Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

Video Editor's Glossary

Assemble Editing see "Insert Editing"

Edit Decision List An EDL is a list of all the edits and source tapes, and how long each segment will be, along with transitions such as dissolves in A/B roll systems. It is used to automate the editing process.

Frame Accuracy How well an editing system does its job is determined by how accurately it is able to make edits. At 30 frames per second, a deck that is accurate to within +/– 10 frames could be off by as much as a third of a second in either direction. "Frame accurate" means that there is no +/– tolerance at all. Frame accuracy is determined by the capabilities of both the edit controller and the video decks being used.

GPI Trigger A pulse that can be sent to the left joystick port and used to trigger a transition in the Video Toaster, or plugged into other devices to trigger a single, preset action.

Insert Edit Instead of recording sequentially one section of video after another onto the master as in *assemble editing*, insert editing lets you add video onto the master without disturbing the previously recorded video that follows.

LANC Port Also called a *Control-L* port, this Sony-developed standard is found on many machines.

Pseudo A/B Roll Editing Using cuts-only editing, you grab the last frame of video and hold it as a still so that it can be used with a transition (fade, dissolve, wipe) into the next video sequence; sometimes referred to as *A/X editing*.

RS-422 Port Basically a 9-pin or 25 serial port, it is commonly found on more expensive industrial-level video decks. *RS-232* ports are a less robust version that do not offer balanced control lines and work only with very short cables.

Time Code A standard method of assigning every frame of video a unique number. Time code is necessary for achieving frame accuracy in editing. The *SMPTE* (Society of Motion Picture Engineers) standard records the time-code signal in either the vertical interleave or onto one of the audio tracks of the videotape. *RTC* time code is a special variation supported by Hi8 camcorders and some video decks. □

—GW

The COMPRESSION



If you feel choosing an image-compression scheme is like playing a game of chance, then listen up. We'll explore how the various formats compress image data and why one might work better for you than another.

ILLUSTRATION BY STEVE THORN

Game

AS TECHNOLOGY improves, we are able to manipulate and generate increasingly higher quality images. Today, we can create 24-bit, photorealistic images (plus effects, animations, and even digital video) that could not be produced on dedicated high-end workstations a few short years ago. Because such quality demands more bytes, this phenomenon has created a problem in terms of storage. The solution has come in two forms: larger, faster hard disks and data-compression techniques.

Dozens of image-compression formats are now available for storing 24-bit images, and they all vary in terms of storage quality and compression efficiency. Which is best to use? As with most issues, there is no single, definitive answer. Most quality display devices and image-processing programs can now load and save many popular file formats. Therefore, your decision to use one or another is not as restricted as it once was. You will, of course, need to use a format supported by all the software and hardware involved in your project. The image quality you require and the amount of disk storage available for your project are other considerations.

We'll dig into specifics of the various formats, but before we do, let's discuss file compression in general. If you run into unfamiliar terms along the way, turn to the sidebar glossary.

Wherefore and Why

Not long ago, still Amiga images were limited to 4096 colors, and resolutions of 720x480 were adequate. Animations were often generated at 320x200 with as few as 16 colors. Third parties developed and Commodore approved specifications on file formats for both images (IFF) and animations (ANIM). Commodore has since improved the standard Amiga display by releasing the AGA-based A4000 and A1200, which support images and animations in 256 or 256,000 (HAM8) colors. And the standard IFF specification has been updated to include full-color 24-bit images required for true photorealism (IFF-24).

Aggressive and creative developers have taken us beyond the Commodore-sanctioned formats. Now, IFF files can contain the 8-bit alpha channel, and the ANIM-7 and ANIM-8 formats have been developed to run high-resolution animations effectively on newer AGA Amigas. Developers such as Centaur (creator of the OpalVision 24-bit display card), have proprietary formats for playing 24-bit animations in real time. Meanwhile, Digital Processing Systems' Personal Animation Recorder uses a combination of proprietary compression and fast hard disks to store and play back high-quality animations and ►

BY STEVEN BLAIZE



digital video. Development of proprietary file formats and the popularity of certain programs are responsible for the large number of formats commonly used today. For example, Apple developed the TIFF specification for use on the Macintosh system. While staying within those guidelines, various developers revised the format to allow for the storage of more information and to effectively reduce file size. There are now more than two dozen flavors of TIFF! The Targa format, while not compression efficient, became accepted because it was required for use with the high-quality Targa display boards for the IBM PC. Likewise, the efficient Framestore format is used by NewTek's popular Video Toaster.

Newer file formats like JPEG (created by the Joint Photographic Experts' Group) can efficiently reduce your disk file size by 10 to 80 percent. This dramatic compression comes at the price of image quality, however: the more you compress a file, the more data is lost, and the more the image is degraded. JPEG introduced this concept of "lossy" file compression to the Amiga; by compromising some of the pixel colors in your image, it can reduce the file size significantly. Generally, the applications software you use (such as ASDG's Art Department Pro for the Amiga) lets you choose the level of trade-off between quality and size. A great deal of research was done for this compression format and it includes careful analysis of colors in the image that the human eye cannot resolve. In fact, the difference between a JPEG file and the original is often imperceptible—even though data may be lost.

Unlike other file formats, JPEG requires the file to be decompressed before further processing. Hardware compression/decompression (CODEC) chips have been developed to increase the speed of processing these files. So significant are these developments that Motion JPEG boards are used to record and play high-quality full-motion digital video where each frame is stored as a separate JPEG file.

The desire for full-motion digital video introduced another compression format: MPEG (Moving Pictures Experts' Group). It is a conceptual derivative of JPEG, but additional compression of frame differences is added for more efficiency. JPEG compression was designed for the requirements of print media, and thus for still images. The MPEG compression algorithm is oriented only for use with full-motion recording and playback. The MPEG specification does not include the ability to edit or pick out and replace specific frames without corrupting the play-back ability.

Older compression formats commonly used in telecommunications are very effective on text and database type files (particularly in compressing several files together into one package). They offer very little benefit, though, for graphics and animation files. Images compressed with the ZIP, LHARC, and ARC formats require decompression (via freely distributable standalone programs) before you can use them.

COMPRESSION COMPARED

What happens when you save the same 24-bit image file using several different file formats? You get several different size files. I saved the opening image (see p. 26) as a 720x480 pixel file under each of the single-image formats discussed. While this is not a scientific method of comparison, it should help you judge compression efficiency.

Format		size (bytes)
IFF-24		514,534
Framestore		524,084
TIFF:	uncompressed	1,084,686
	RLE	1,082,898
	LZW	504,060
Targa:	uncompressed	1,082,898
	compressed	914,781
PCX		577,372
PICT		572,208
WMF		1,083,096
BMP		1,082,934
GIF (256 colors)		34,886
EPS		2,964,848
JPEG (at 80% in ADPro)		87,029
ARC (IFF-24 source)		435,462
ZIP (IFF-24 source)		400,254
LHARC (IFF-24 source)		389,053

Format Dossiers

Different 24-bit file formats are very useful and efficient in certain circumstances but not in others. The following sections briefly describe single-image and animation file formats, and outline their strengths and weaknesses. The most popular formats are covered.

SINGLE IMAGES

Thanks to the initiative of such programs as ASDG's Art Department Professional, the Amiga can now exchange still-image files across computer platforms with ease. Except where noted, all the image formats are lossless. To discover how these formats compare in terms of compression efficiency on a sample file, see the sidebar "Compression Compared."

IFF-24 (Interchange File Format)

The standard Amiga file format supports 24-bit images, and some developers have added support for

32-bit files. This format supports both bitmapped and vector (object-oriented) graphics, and is average in size. Although IFF-24 support is *de rigueur* among Amiga products, the format is not widely supported on other platforms.

Framestore
This proprietary format, introduced by NewTek's Video Toaster for display and editing, supports 24-bit images and an alpha channel. Framestore provides good file compression and supports only bitmapped images. It is difficult to find Framestore support on platforms other than the Amiga; support is scant even among non-Toaster Amiga programs.

TIFF (Tagged Image File Format)
This popular format has been used for some time on all platforms. It supports 32-bit bitmapped images—uncompressed or processed with RLE or LZW compression. The two compression methods can produce average space savings depending on the composition of the image (an image with large strips of the same color generally reduces well with RLE, for instance). Even with compression, TIFF format files are considered lossless. While this format is widely used, there are dozens of variations and not all software that claims to load TIFF files can handle all varieties.

Targa
Another popular bitmapped format, Targa is well supported on most platforms and offers both an uncompressed and compressed format for up to 32-bit files. As with TIFF, the uncompressed version produces a large bitmapped file. The compressed version, which is not as frequently used, produces average-size files.

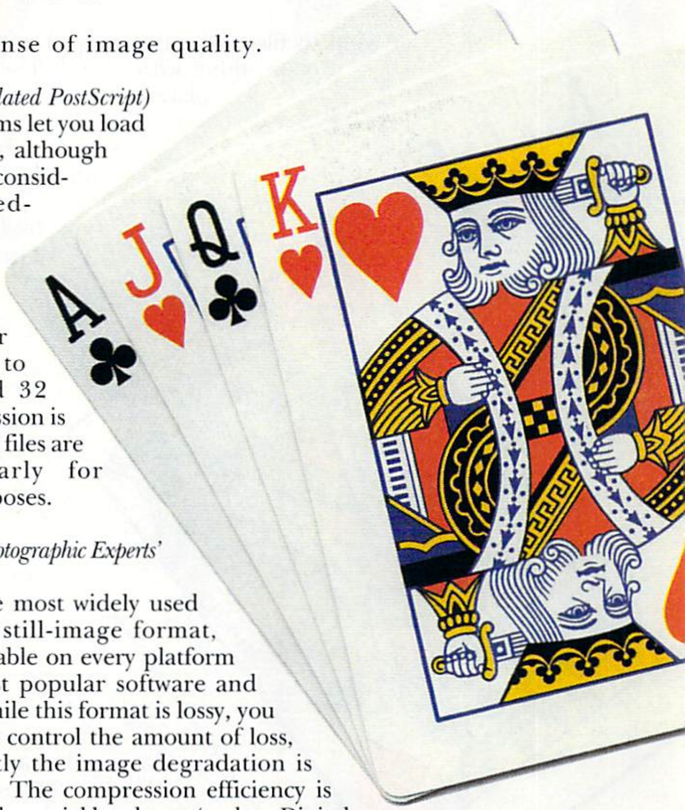
PCX
Made popular in the early development of DOS paint programs, this bitmapped format supports 32-bit files and produces average-size files.

PICT
Considered the standard lossless format for the Macintosh platform, PICT is becoming more widely used by other platforms and software. It supports both bitmapped and vector-format graphics in up to 32 bits, and offers average compression.

WMF (Windows Meta File)
This counterpart to PICT format supports both bitmapped and vector graphics up to 32 bits. File compression is average—very similar to PICT. This format is used a lot by the large Windows user base, but is not used much by software on the Mac and Amiga platforms.

BMP (Bitmapped Picture)
This Microsoft-based bitmapped file format can handle lossless 32-bit graphics and is used heavily on both Windows and Macintosh platforms.

GIF (Graphic Interchange Format)
This bitmapped file format is widely used on bulletin-board systems, and can be loaded with software on every platform. The format supports only up to 256 colors, however, and therefore offers efficient file size at the expense of image quality.



EPS (Encapsulated PostScript)
Some programs let you load EPS graphics, although the files are considered noneditable. EPS format supports bitmapped and vector graphics up to and beyond 32 bits. Compression is minimal; EPS files are used primarily for printing purposes.

JPEG (Joint Photographic Experts' Group)
Currently the most widely used compressed still-image format, JPEG is available on every platform through most popular software and hardware. While this format is lossy, you can generally control the amount of loss, and frequently the image degradation is undetectable. The compression efficiency is excellent. With special hardware (such as Digital Micronics' Digital Broadcaster), you can achieve Motion JPEG for full-motion playback and recording.

ARC/ZIP/LHARC
These formats use different compression schemes and are best for text and database files. In some unusual situations, an image compressed using these formats could actually be larger than the original file.

ANIMATIONS

Animation-sequence formats are not yet as interchangable among platforms as still-image formats. Currently, only ANIM and MPEG are supported by Amiga products. This situation will change, however, once Amiga developers make animation sharing a priority.

ANIM
The standard Amiga format for real-time animation playback, ANIM has been updated by developers and Commodore to handle up to 256,000 colors and sound in animation playback on AGA machines. The compression of files is very efficient for delta change-type animation storage. This format handles only bitmapped graphics and is not supported for playback on other platforms.

QuickTime
The standard for real-time playback on Macintosh supports bitmapped and vector graphics in 24-bit color, with sound and text. Hardware can be used to speed playback and increase usable colors. Software is available for playback of QuickTime "movies" for several platforms.

Video for Windows (AVI)
This is the format for real-time animation on Windows-based machines. Like QuickTime movies, Video ►



for Windows files support bitmapped graphics in 24-bit color along with sound. The files can be played with software support only, but support hardware lets you use higher resolutions and more colors.

Intel Indeo Video
This Video for Windows competitor offers the same type of support for full-color graphics and sound, with hardware assisting in speed for better resolution and color.

FLI/FLC
This format, introduced by Autodesk, provides animation playback under DOS or Windows and is supported by software on other platforms. It supports only up to 256 colors and limited resolutions, however; playback speed is totally dependent upon machine speed.

Motion JPEG
This format was developed for digital recording, editing, and playback for high-quality, full-motion video or animation. JPEG-compressed files are used as the individual frames of the animation, and special hardware is necessary to compress and decompress them in real time. Some developers use special hardware and software to sequence sound with the digital video. This format is currently one of the best choices for digital video that needs editing, because you can add or replace any specific frame.

MPEG (Moving Pictures Experts' Group)
Very similar in quality recording and playback to Motion JPEG, MPEG also uses special hardware to record and play digital video. The compression method is much more efficient, however, and it does not allow you to add, delete, or replace a specific frame in the sequence. You can edit sections in an MPEG digital video, but cuts need to be made in certain spots or the quality of the edited area will suffer.

As in the past, third-parties will create new technology for better speed, quality, and efficiency. Digital-video and still-image formats that are just emerging today may become tomorrow's standards. So keep your eye on the future as you compress files. Your wish for better, faster, and more efficient formats is sure to come true! ■

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GLOSSARY

24-bit Image—An image containing any of 16.7 million colors and shades. The subtle color changes allowed produce photorealistic results, that is, the human eye sees a believable image instead of individual pixels.

32-bit Image—A 32-bit file contains no more colors than a 24-bit one, and no more are necessary for photorealism. The only thing extra that a 32-bit file does contain is an 8-bit alpha channel, which is useful for transparency during image compositing.

Alpha Channel—An 8-bit range of color used to control transparency. The 256 gray shades within the alpha channel let you determine how much of one image is composited with another image—or even video—underneath.

Bitmapped Image—A graphic defined by coloring individual pixels (screen dots). In a black-and-white graphic, each pixel is either black or white. Each pixel in a 24-bit image can be any of 16.7 million different colors. (Compare to Vector image.)

Delta Change—The difference between two adjoining frames in an animation. In some cases, the only change might be the position of a hand, for instance. By storing only the differences between frames instead of the entire frames, some animation formats can achieve good compression and retain quality.

Lossless/Lossy—Prior to the introduction of lossy formats, the term lossless did not exist. All formats were lossless, that is, they retained complete image quality. Lossy formats such as JPEG achieve such good compression by reducing the number of colors in the image. The algorithm removes subtle color variations not perceived by the human eye, and, in doing so, compromises image quality. Altering and recompressing a lossy-format image can introduce undesirable artifacts.

Vector Image—A vector-based, or object-oriented, image is mathematically defined. Under this scenario, a shape comprises not of an arrangement of pixels, but connected points that can be filled or outlined. Vector files are typically smaller than bitmapped files in terms of bytes. What's more, they can be scaled without quality loss, although you cannot change the color of individual pixels. □

—SB

The CD Boom

CD-ROM is becoming more exciting and more accessible. Here's where to look to find CD-based software to use with your Amiga.

By Julie Petersen

The US Library of Congress has accepted CD-ROMs into its holdings. *Scientific American* has announced plans to publish the respected magazine on CD. New CD-ROM software announcements have increased to about 40 per week, with no slow-down in sight!

With so much CD software being developed, why aren't Amiga magazines overflowing with CD titles? There are two reasons: not all CD-ROM software is compatible with the Amiga operating system, and not all software that is Amiga compatible is promoted as such.

There's an old saying, "Teach a man to fish, and you'll feed him for a lifetime . . . " So in addition to listing Amiga titles currently available on CD, I'll discuss the issues involved in accessing CD-ROM software. I'll start with the titles developed specifically for the Amiga. Then, I'll lead you through the sea of software designed for other platforms but accessible via the Amiga.

Although you'll see the CD32 name come up once in awhile, I'll stick to titles that work with the whole Amiga line. Look for coverage of CD32- ►



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specific releases in the "Game Preserve" and Reviews sections each month, and perhaps in a roundup in some future issue. (To contact the companies mentioned in this article, see the "Manufacturers'/Distributors' Address List" on p. 94.)

Now Playing On Amiga

What you can access depends upon what kind of system and CD-ROM drive you have. Commodore's older CDTV and its brand-new CD32 both provide built-in players, but because they have different custom chip sets, only CD32 can access software designed for AGA (Advanced Graphics Architecture). Commodore's discontinued A570 drive provides CD-ROM access to the Amiga 500. Amiga 3000s come with a SCSI interface and thus are directly compatible with CD-ROM

On Disc

This is not a comprehensive listing of all CD-ROM software available for the Amiga, but it is a good start. While most of the titles listed here were designed specifically for use with the Amiga, I've also thrown in a few multiplatform titles that I have found to be particulary good.

Resource Libraries

Title	*Retail Price, Company*	*Description*	*Developed For*
Aminet CD-ROM	$29.95, Walnut Creek	4000+ utilities, games, music, etc. from the on-line Amiga library	Amigas
AMUC CD 1	$20, AMUC	Contents of the Amiga Users of Calgary's BBS	Amigas
Audio Resource Library 1	$20, Knowledge Media	1000 sound files, mixers, generators and music editors	Multiplatform
The Clipart Warehouse	$29.95, Chestnut	More than 11,000 images in PCX and TIF format	Multiplatform
Fred Fish Online 1.5	$45, Fred Fish	Resource software, utilities, source code, games, more	Amigas
GIFs Galore CD-ROM	$20 Walnut Creek	Thousands of fractals, clip-art pics, photos, etc. in bitmapped GIF format	Multiplatform
Graphics Resource Library	$19, Knowledge Media	Hundreds of graphics images, animations, programs	CDTV
Mega Media 1	$26, Knowledge Media	1000+ graphics and audio files for multimedia	CDTV
Pandora's CD	$10, Optonica	Multimedia demo, 2000 color clip-art pics, 100 photos, textures, sounds	Multiplatform
Pro Volume I & II	$149 each, Wayzata	Clip-art images in EPS format	Multiplatform
Quick Art Delite	$119, Wayzata	300-dpi images in both TIFF and Mariah format	Multiplatform
Quick Art Deluxe	$349, Wayzata	Quick Art Delite plus 1,700 images of animals, plants, toys, and more	Multiplatform
Rick Doyle Digital Imagery	$34.95, Rick Doyle	Action water sports and scenic landscapes; 24-bit TIFF and gray-scale	Multiplatform
Serial III Typecollection	$50, Parallel Motion	4000 PostScript sign-making fonts	Amigas
Super Clip Art	$25, Groupware	6000+ Clip-art images	Multiplatform
Super Fonts	$25, Groupware	2000+ Adobe and True Type fonts	Multiplatform
Super Space	$25, Groupware	High-quality NASA photos	Multiplatform
Super Wallpaper	$25, Groupware	Collection of wallpaper-like backgrounds	Multiplatform
Syndesis 3D-ROM	$180, Syndesis	500+ 3-D objects in common formats incl. DXF, plus IFF, TIFF, GIF images	Multiplatform
Texture City CDs	$79, Texture City	Hi-res textures and backgrounds for video and publishing	Amigas
Texture Heaven CD	$56, Asimware	24- and 8-bit wood, marble, scenery, tiles, abstracts; symbols, thumbnails	Amigas

Reference

Title	*Retail Price, Company*	*Description*	*Developed For*
Advanced Military Systems	$39.95, Dominion	More than 1000 action shots of the world's military systems	CDTV
Americana	$30, Aris Entertainment	Multimedia clip art and landmarks of America; sounds, MPEG drivers	Multiplatform
American Heritage Illust. Encyclopedic Dictionary	$34.95, CEI	Houghton Mifflin's reference comes alive with illustrations, pronouncer, more	CDTV
Animals in Motion	$34.99, On-line	Insight into animal locomotion using footage from Eadward Muybridge	CDTV
Bibles and Religion	$29.95, Chestnut	All popular New and Old Testament versions plus study guides	Multiplatform
Complete Legal Guide	$29.95, Chestnut	500 legal forms, including contracts, residential leases, wills	Multiplatform
Compton's Encyclopedia	$360, Compton's	MultiMedia School Edition; based on 26 book volumes	Multiplatform
Connoisseur Fine Arts	$31, Lascelles	400+ classical through 19th century works of art	CDTV
Desktop Bookshop	$25, CD-ROM Source	Anthology of e-texts, from Bible to War & Peace; extensive index	Multiplatform
Elysian Archive	$25, Groupware	More than 6000 files: games, utilities, tracker modules, demos, graphics, fonts	Multiplatform
Gardening	$29.95, Chestnut	Topics includes garden planning, pest control, organic methods	Multiplatform
Grolier Encyclopedia 2	$395, Commodore	Encyclopedia on CD-ROM	CD32
Guiness Disc of Records	$50, New Media	About 3500 records, 800 images; picture database indexed alphabetically	CD32
The Illustrated Holy Bible	$50, Animated Pixels	Old and New Testaments	CDTV
Illustrated Shakespeare	$50, Animated Pixels	The complete works of the Bard with concordance, bookmarking, and more	CDTV
Illustrated Shelock Holmes	$50, Animated Pixels	Complete with music, search facilities, more than 250 grapphics, and more	CDTV
Insight: Dinosaurs	$60, Optonica	Dino facts, puzzles, quizzes; done with British Natural History Museum	CD32
Insight: Living Body	$60, Optonica	Human body's form, function, systems; illustrations, animations, motion video	CD32
Insight: Technology	$60, Optonica	260 modern discoveries, inventions; graphics, sound, animation	CD32
NASA . . . The 25th Year	$20, Troika Multimedia	Overview of space program; CDXL motion format	CDTV
New Basics Cookbook	$59.95, CEI	The award-winning Silver Palate collection of more than 1800 recipes	CDTV

players; just add CD file-system software from Asimware Innovations (AsimCDFS, $79), Xetec (CDX Disk Set, $50), or Canadian Prototype Replicas (CDROM-FS, $37.50). Other Amiga models can access a CD-ROM drive with the addition of this software plus a third-party SCSI card. (For information on recent CD-ROM drive releases, see "CD-ROM '93," p. 30, Oct. '93.)

The three developers of CD file-system software have added support for Kodak PhotoCD so that any Amiga with a CD-ROM drive can access film images printed to CD. And now that licensing arrangements have been worked out between Commodore and Kodak (according to a Commodore representative), you can expect to see direct PhotoCD compatibility on CD32.

Resource-library discs are designed for cross-plat-►

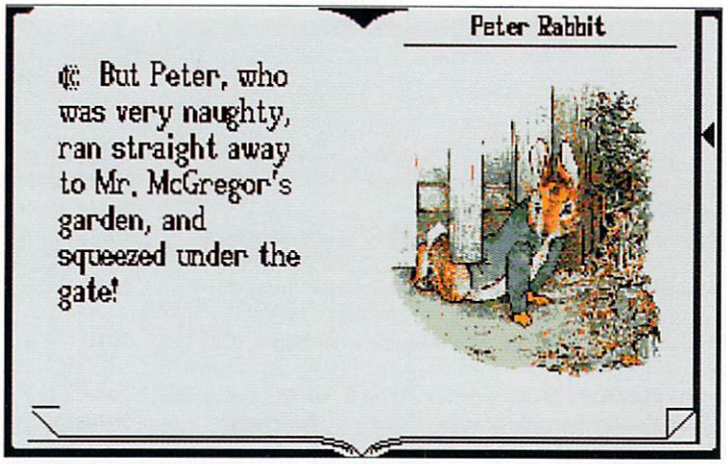
New York	$29.95, Aris	Multimedia clips, sounds, animatons of NYC landmarks; with MPEG driver	Multiplatform
Our Solar System	$29.95, Chestnut	Photos of planets, moons, comets, galaxies, and more	Multiplatform
Project Gutenberg –1*	$39.95, Walnut Creek	Aesop's Fables, Moby Dick, the Magna Carta	Multiplatform
Space & Astronomy	$39.95, Walnut Creek	1000 images and 5000 text files on space exploration, planets, astronomy	Multiplatform
Time Table of Business, Politics, and Media	$59.95, CEI	Explores the acquisition of wealth, power, and knowledge in human history	CDTV
Time Table of Science and Innovation	$59.95, CEI	The history of science and technology; all entries cross-referenced	CDTV
Time Table of the Arts and Entertainment	$59.95, CEI	Multimedia effects include museum references, portraits, quotes, and music	CDTV
Women in Motion	$34.99, On-line	Insight into human locomotion using pictures of Eadward Muybridge	CDTV
World Traveller	$29.95, Chestnut	Images in PCX and GIF format of Grand Canyon, Maine, and more	Multiplatform

GAMES AND EDUCATIONAL

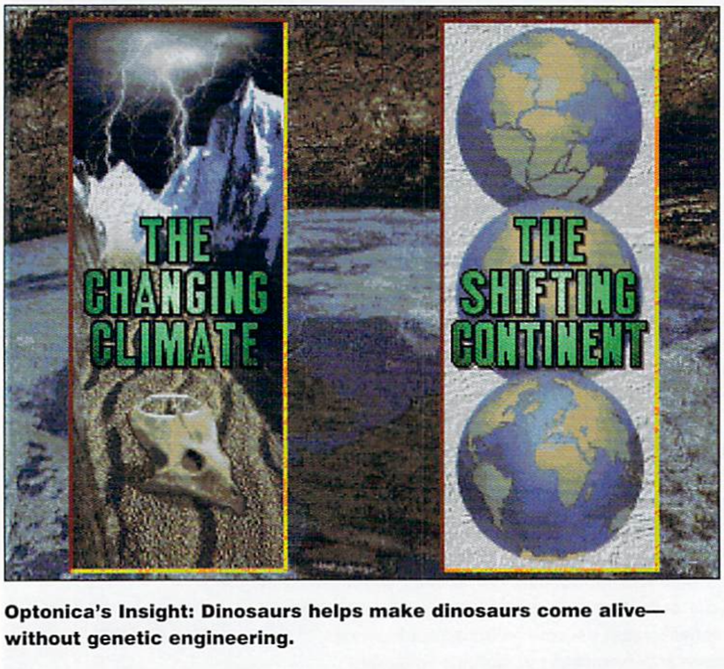
Title	*Retail Price, Company*	*Description*	*Developed For*
A Long Hard Day on the Ranch	$29.95, Discis	Story by A. Nelson about a boy's adventures at a ranch; grade 2+ reading	CDTV
Alfred Chicken	$39, Mindscape	Arcade game	CD32
Barney Bear Goes to School	$15, Free Spirit	Preschool learning game	CDTV
Battle Chess	$59.95, Interplay	Classic chess with a medieval war twist; in 3-D	CDTV
Cinderella	$29.95, Discis	The classic story; grade 3+ reading level	CDTV
Classic Board Games	$49.95, Merit Software	Chess, checkers, backgammon	CDTV
Dominion	$49.95, Dominion	International strategy game challenges you to take control	CDTV
Fantastic Voyage	$49.95, Centaur	Traverse the human bloodstream to wipe out a bloodclot in the brain	CD32
Future Wars	$59.95, Interplay	Travel through time to save the earth from destruction by aliens	CDTV
Heather Hits Her First Home Run	$29.95, Discis	Story by T. Plantos about children facing crucial moments; grade 2+	CDTV
Hound of the Baskervilles	$34.95, On-line	Recreates Sherlock Holmes' greates case from contemporary evidence	CDTV
Jurassic Park	$35, Ocean	Arcade game based on the movie	CD32
The Labyrinth of Time	$55, Electronic Arts	Ray-traced graphic exploration maze	All Amigas
Lemmings	$49.99, Psygnosis	The classic arcade adventure with 120 increasingly difficult levels	CDTV
Lunar Rescue	$49.99, Odyssey	Multi-language game with digitized NASA footage and facts database	CDTV
Moving Gives Me a Stomach Ache	$29.95, Discis	Story for children facing a move by H. McKend; grade 2+ level	CDTV
Mud Puddle	$29.95, Discis	Story of a walking mud puddle by Robert Munsch; grade 1+	CDTV
My Paint	$39.95, Saddleback	Painting and learning for children	CD32
North Polar Expedition	$49.95, Virgin Games	Role playing adventure for groups of five to ten players	CDTV
The Night Before Christmas	$29.95, Discis	Clement C. Moore's poem; grade 2+ reading level	CDTV
The Paper Bag Princess	$29.95, Discis	Our heroine learns an important lesson; grade 2+ reading level	CDTV
Psycho Killer I and II	$29.95, On-line	Realistic games uses digitized images and audio; play can affect story	CDTV
Scary Poems for Rotten Kids	$29.95, Discis	Chills and chuckles in outlandish vocabulary; grade 3+ reading level	CDTV
Sherlock Holmes Detective	$69.95, Viacom	Match your deductive abilities against the master sleuth	Multiplatform
Sign of Four	$34.95, On-line	The detective's cases become multimedia advantures	CDTV
Space Wars	$39.99, Odyssey	Outer-space action combat ; in multiple languages	CDTV
Spirit of Excalibur	$59.95, Virgin Games	Epic adventure game involving Arthur's Roundtable	CDTV
Super Games Pack	$39.99, Odyssey	Three games: Jailbreak, Byteman, and Deathbots	CDTV
The Tale of Peter Rabbit	$29.95, Discis	This rendition of the classic tale includes Spanish translation; grade 2+	CDTV
The Tale of Benjamin Bunny	$29.95, Discis	Another close encounter with Mr. McGregor; grade 2+ reading level	CDTV
Thomas' Snowsuit	$29.95, Discis	How Thomas avoids wearing his detested snowsuit; grade 1+ reading	CDTV
Town with No Name	$39.95, On-line	Story game	CDTV
Wrath of the Demon	$49.95, ReadySoft	Graphic adventure with multilevel parallax scrolling	CDTV □

* Project Gutenberg is an ongoing effort to collect more than 10,000 significant books on disc by the year 2001.

form use and provide equal-opportunity access. But what about games and applications? For guaranteed access to CDTV applications, you still need CDTV or an Amiga 500/A570 drive setup. Beyond that, things are a bit murky. Of the three driver-software packages, Xetec's CDX Disk Set seems to offer the best compatibility with CDTV titles. Xetec claims a 90% success rate thanks to its CDTV emulation software. By contrast,



Discis' "Kids Can Read" series includes interactive books such as Peter Rabbit



Optonica's Insight: Dinosaurs helps make dinosaurs come alive—without genetic engineering.

Asmiware promises about 50% compatibility; accelerators, hard drives, and other add-ons all impinge upon CDTV software compatibility. Keep in mind, too, that older titles will run only under AmigaDOS 1.3. Still, I was able to run Discis' The Tale of Peter Rabbit CDTV release under AmigaDOS 2.04 and 2.05. One caveat: Because they were designed specifically for CDTV, many of these titles do not allow you to exit without rebooting the system.

If, however, a program needs a fast processor and AGA (i.e., if it is designed for CD32), you can't just pop it into your stock A2000 and expect it to run. Many of the new games take advantage of enhancements in the design of the CD32 hardware and AmigaDOS 3.x. While most CD32 titles are developed on the Amiga 4000, they may run on a CD-ROM equipped A4000—but they may not. And experts might even be able to coax CD32 titles into working on an A2000 or A3000 by adding a third-party graphics card such as Expert Services' Picasso II, GVP's EGS Spectrum, or MacroSystemUS's Retina (see "AGA Fixes, p. 38, Apr. '94 for more on AGA emulation). In the case of the A2000, however, you'll also need an accelerator and a few carefully chosen incantations. Unfortunately, there are no clear guidelines here beyond actually trying it. As a consumer, the best thing you can do is ask your vendor or the developer of the software.

One CD32 offering that demonstrates how such titles can run on many systems is The Labyrinth of Time (Terra Nova/Electronic Arts). By skillful use of HAM (Hold and Modify) images, the authors have created a game that not only rivals the best AGA graphics, but also runs happily on almost any CD-ROM-equipped Amiga.

In searching for Amiga-specific CD software, I found more than I expected. Though some are combination discs, and not easily pigeon-holed, most fall under a few basic categories. The titles are listed in the sidebar called "On Disc."

The Pan-Platform Smorgasbord

Now that you know about Amiga titles, let's get a better understanding of how CD software works in general so you can expand your library.

Single-level Directories

CD-ROM single-directory libraries are easy to access: You open a disc, put it in your player, type DIR CD0: (or appropriate device name) and the contents of the library (up to 600 megabytes) will be listed on the screen just like a floppy directory.

These basic-compilation CDs are easily interchangeable between IBM-PCs and Amigas. Graphics usually use such standard formats as IFF-ILBM, TIFF, GIF, and JPEG, all of which are accessible on the Amiga thanks to ASDG's ADPro and similar programs. As long as the disc itself follows a standard format such as ISO-9660, you can put it in an Amiga or IBM-compatible computer, display the single directory, and read files from the disc. You may also be able to read the PC High Sierra format, but your best chance will be with ISO-9660 discs, which are the most common type. (Some CDs list the format in small letters on the back of the package.)

Reading Mac discs is also sometimes possible with Mac CD driver software, and if you own an A-Max or Emplant Mac emulator, you may wish to access some of the graphics and clip-art discs available for video and desktop publishing to use on the Amiga. Be aware that Mac files differ from Amiga and PC files by being split into "data" and "resource" forks. Check your CD-ROM driver software documentation for utilities that support MacBinary format (which combines the forks) or MacHFS. If you have these, you can add some single-level directory Mac CD-ROMs to your collection.

Multi-level Directories

CD-ROM libraries with "nested" information, that is,



files that are ordered in levels, take a little more file manipulation to determine what's on the disc, but readability—and sometimes search and sorting—are enhanced.

The Fred Fish collection fits into this category; you can locate all the files in its nested directories with your Amiga. If, however, you try to read that same CD-ROM from another platform, like the IBM, you're out of luck. You may see the top level of the directory structure, but since the IBM doesn't speak AmigaDOS, it cannot find the rest of the information. Such CDs are not directly interchangeable unless you have a utility that recognizes the foreign file structure. Fortunately, if you have a Bridgeboard (or PC file utility), you can extract files from a PC CD-ROM and then use the 'awrite filename /b' command to transfer them over to your Amiga directory. This opens up enormous libraries of ready-to-use information from the PC side.

Applications

If you take a CD-ROM title designed to use Amiga AGA, stereo sound and pre-emptive multitasking, no amount of cajoling will make it work on a Mac or IBM. The opposite is true too—unless, of course, you have a PC or Mac emulator. Emulators such as Emplant have a SCSI port where you can attach your CD drive. The folks at ReadySoft told us they had tested A-Max 4 with CD-ROM drives by NEC and Apple, and were successful in running Mac applications from them. Be aware that the Mac is fussy about some of the low-end CD-ROM drives (this is a Mac characteristic and not directly related to the functioning of A-Max or Emplant) and may display the files without allowing you to actually access them. Moderate and high-end CD-ROM drives that we tested work more reliably.

Rolling Your Own

PhotoCDs, accessible via any desktop computer with the right driver software, contain graphic images derived from your negatives and slides that are scanned and copied onto a disc in predefined sizes and resolutions. Printing a 24-exposure roll of film to CD costs about $50. You get five copies of each image in different resolutions, a fact that limits the capacity of a PhotoCD to only about 100 images (less if the images are added in several sessions). PhotoCD image quality is remarkable, equivalent to what scanners in the $25,000 range produce.

Speaking of creating your own discs, the decreasing cost of CD mastering makes it possible for "the rest of us" to achieve quantity distribution. Mastering costs have dropped dramatically. Asimware, for instance, recently began mastering discs for $90 each. I have seen mail-order ads in imaging magazines offering mastering services for as low as $35–$60, with copies running $.50–$2 (depending on quantity). Organizations such as the Amiga Users of Calgary have adopted this method of distributing the contents of more than 700 floppies. The group's AMUG CD 1 contains files that have been uploaded to the club's five-line electronic bulletin board.

The Sound of CD-ROM

Many people are not aware that they can play music CDs on their CD-ROM drives. If your drive has an audio-out jack, just plug in a set of headphones or small speakers, cue up your favorite album, and run the audio driver



The Labyrinth of Time by Terra Nova/Electronic Arts is a a visually stunning exploration game



Audio driver software such as that provided in Asimware's AsimCDFS package, gives you all the controls necessary to play your favorite tunes using the Amiga.

provided with your CD file-system software.

The CD audio driver software works by mimicking the internal electronics in a component CD player. That is, the normal buttons and knobs associated with a stand-alone CD player are simulated on the screen. To start the music, simply click the Play button with the mouse. The software controls may give you more random, shuffle-play, and memory options than your dedicated CD player!

With newer CD-ROM drives (such as NEC's 3x-series units), you might not even need the software driver. Some smart manufacturers realized a CD-ROM drive is just like a portable CD player and built the audio controls into the drive.

While some music CDs contain graphics that you may be able to view on your monitor, the CD+G (G for graphics) format is now somewhat dated. The proportion of audio CDs with graphics is small, and trying to find out which discs are CD+G is like hunting in the ►



dark. What's more, although CDTV can read the graphics from CD+G discs, an Amiga with CD-ROM driver software may not be able to. According to Xetec, most CD-ROM hardware does not support CD+G.

A more recent graphics-based innovation in the audio CD world is truly interactive music where the artist provides the "building blocks" and the listener puts them together. Unfortunately, the discs released thus far from creative artists such as Todd Rundgren and Peter Gabriel are in Phillips' CD-I format (a competitor to CDTV and CD32).

A New Spin

Perhaps the most exciting development in CD software is full-motion animation. Amiga ANIM and Mac QuickTime animation formats are generally incompatible, but MPEG, which is gaining popularity on all platforms, is being picked up by entertainment software companies. Aris Entertainment's Americana is one title that uses MPEG animations to guide you through a miniature "movie" tour of America. Or, if you like chills and thrills with motion added, the Jurassic Park game can provide it.

MPEG, like PhotoCD, is a licensed technology (C-Cubed), so you must have the right software to interpret and display the motion graphics. Thankfully, most programs containing MPEG video include the driver. That's not all there is to the story, though. You also need MPEG hardware, and possibly a software link, as well. Commodore promises to release an MPEG module for CD32 soon, and has also discussed MPEG for the A4000. Owners of other machines can get MPEG compatibility through such boards as Digital MediaCaster (Digital Micronics), or an upcoming MPEG decoder from Scala. Be aware, though, that these hardware packages do not by themselves guarantee the ability to play MPEG selections from CD-ROMs. Digital Micronics, for instance, says that special software, still under development, is necessary for compatibility.

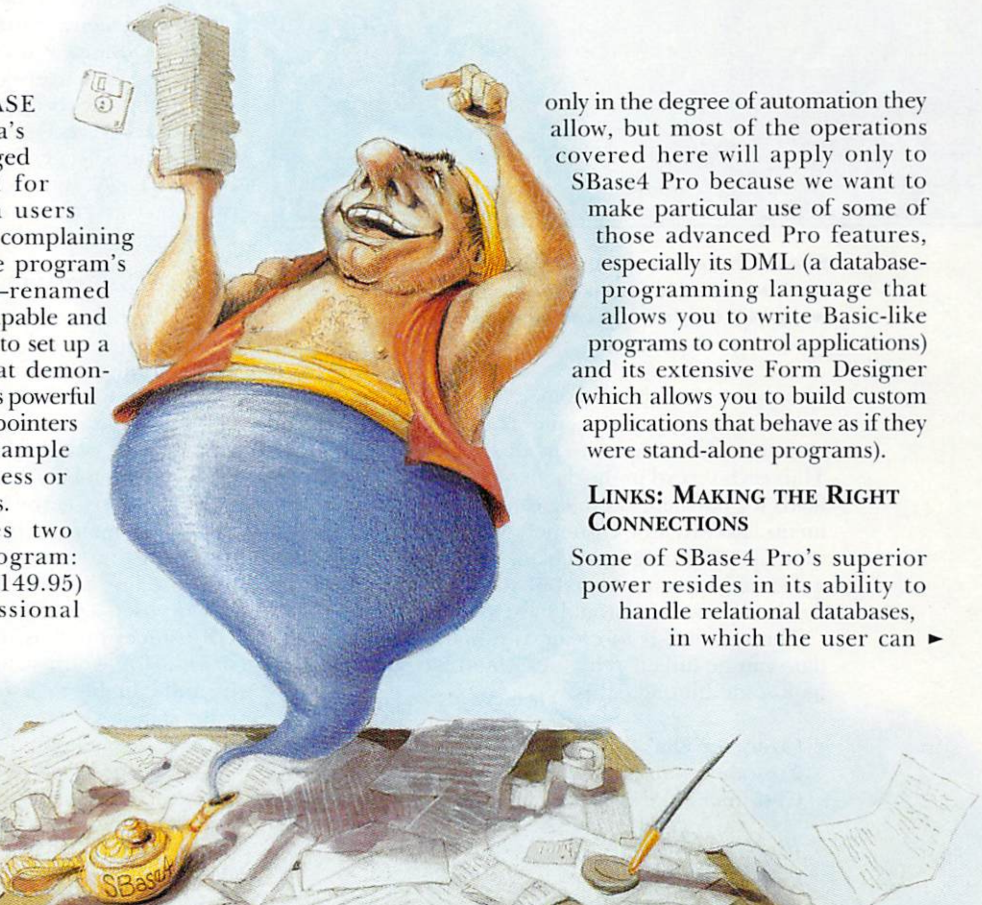
The expanding realm of CD-ROM holds much for Amiga users—especially for those willing to explore beyond the obvious. Abundant software—from graphics collections to applications programs using the latest technology—are available. And CD-ROM is destined to become more important: NewTek's announcement of its Video Flyer mentions that the software will be available on CD-ROM only.

Developments such as MPEG and interactive music point the way toward an interesting future; we can expect not only more but also different kinds of CD software. If you are willing to experiment, this is an exciting time! ■

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DATA ON *Command*

Oxxi's powerful SBase4 Pro can handle a lot more than just three wishes when it comes to organizing your data and putting it to efficient use in customized applications. Follow this tutorial and we'll conjure up a sample database to show you how Pro can work its magic for your home or business needs.



WHILE SUPERBASE has been the Amiga's only viable full-fledged database program for some time, Amiga users haven't done much complaining about that fact. The program's latest incarnation—renamed SBase4—is highly capable and versatile. We'll use it to set up a sample database that demonstrates some of SBase's powerful features—and offer pointers on adapting the example for your own business or personal applications.

Oxxi distributes two versions of the program: SBase4 Personal ($149.95) and SBase4 Professional ($299.95). The two programs differ only in the degree of automation they allow, but most of the operations covered here will apply only to SBase4 Pro because we want to make particular use of some of those advanced Pro features, especially its DML (a database-programming language that allows you to write Basic-like programs to control applications) and its extensive Form Designer (which allows you to build custom applications that behave as if they were stand-alone programs).

LINKS: MAKING THE RIGHT CONNECTIONS

Some of SBase4 Pro's superior power resides in its ability to handle relational databases, in which the user can ►

By Pam and Joe Rothman

ILLUSTRATED BY BOB SCHUCHMAN

connect the information in several databases via links. For instance, if you were going to track customer accounts and payments, your database would be greatly improved with links.

A typical customer-accounts database would consist of customer names, their addresses, and a list of payments. One could make up such a database using records whose fields look like this:

Customer File
Customer Name (indexed)
Customer Address, etc.
Payment One
Payment Two
Payment Three, etc.



SBase4 Pro's Form Designer allows you to build customized applications, like the form screen above, that work as if they were stand-alone programs.

The index is on the Customer Name field, so it is easy to look up customers by name. The problem is that some customers have three, four, or even more payments. Thus each record in the database must include as many fields for payments as the customer with the most payments. Records for customers with few payments will wind up containing lots of blank lines. Also, as each customer makes payments beyond those fields already in the database, new fields would have to be added.

The solution is to create two database files whose data can be linked. The files would have records that look something like this:

Customer File
Customer Name (indexed)
Customer Address, etc.

Payments File
Payment
Customer Name (indexed)

In this example, the payments for each customer are separate entries. The link between the payments is the customer, which is indexed in both databases. (A link must be indexed in both database files.)

The strength of the link approach isn't just that you don't take up space with unnecessary blank lines. Searching and updating the data is much simpler, as well. Without links, a search for a particular payment would entail searching each possible field—first Payment One, then Payment Two, and so forth. Using links, a search would look at the entries in a single Payment field and quickly find the requested payment for that customer.

Using links gives a much more flexible and usable shape to the data because you can regard it as separate bits of information, instead of big clumsy blocks of data. Each payment account can be as large as needed, since the Payments file will allow unlimited entries for each customer.

Linked databases must be displayed on a "form" (or screen) created with the SBase4 Form Designer. The Form Designer can be used to link the information together via two main tools: SB File Link and the Transaction lines on the Define menu.

Every link operates on the principle of "few to many." There are comparatively few customers to be linked to the many payments. You can show as many payment lines as will fit by multiplying the single payment field with transaction lines. When a customer is selected, the form will display all the payments linked to that customer in the transaction lines.

More payments than there are transaction lines? Here is where SBase4 Pro's DML programming language comes in. DML can be used in conjunction with onscreen buttons corresponding to two DML language commands: Select Form Next Page (to display more payments) and Select Form Previous Page (to return to the previous page). By clicking one or the other of these buttons, you can access all of the payments—no matter how many there are—in a given customer account.

DML: A Smooth Operator

Programs can be written in DML to automate operations and make data handling smooth and simple. When adding a new customer, use DML to enter the information into requesters. A DML program can automatically re-enter the customer name for each payment, so you don't have to type it over and over again. (Remember, the customer name must be stored with each entry in the Payments database file to satisfy the requirements of the links.) DML can do anything the SBase4 menus can do, and much more.

There are many different kinds of requesters that can be used via DML. They can contain Yes/No or OK/Cancel buttons, exclamation points, question marks, stop icons, string gadgets to type information in, and editable text strings that can say whatever you want. There's even a password requester that doesn't show what's being typed into it.

DML uses keywords, such as File, Request, If and Then, which are recognized as commands and are automatically capitalized when entered into the program editor. DML can also employ filters and If/Then logic to allow your database to make decisions. A DML program to check your database for payments due would look something like this:

```
FILE "Payments"
SELECT WHERE Due.Payments >= TODAY AND Due.Payments
  <= (TODAY + 14)
```

►

```
SELECT FIRST
IF EOF ("Payments") THEN REQUEST "No Payments
  Due.","",100,ok%:SELECT WHERE:END
VIEW
END
```

The first line selects the file "Payments," while the next line sets up the filter for any payments due between today and two weeks from today. Line 3 moves to the beginning of the selected entries. If there are no payments due within that time period, SBase4 detects an end-of-file marker (EOF) and a requester comes up indicating "No Payments Due." The filter is taken off with the Select Where command and the program ends. (In line 5, note that you can type DML commands on the same line if they are separated by a colon (:).) If there are payments due within that time period, SBase4 does not detect the end-of-file marker and skips the rest of line 4. It then goes on to display (View) the first payment due and the program ends.

While this program runs, a subprogram can check for past payments that have already been made. If you put a GOSUB on the second line, it will skip to another part of the program, run the subprogram, and then

SBase4 Pro Tips & Tricks

#1 SBase4 Pro's DML language contains more than 220 reserved words that can't be used as field names. Some of these, however, are very common words that you might want to use in your database, such as "First Name" or "Printer." You can work around the DML "reserve clause" by using variations on these field names (like "FName" or "Printr") as you construct your database, and then use the SBase4 Pro Form Designer to label the fields with their correct designations.

#2 You can enter date information into your database in any number of ways: with separators or spaces, (3/1/94, 3-1-94, 3 1 94) or with leading zeros (030194) where appropriate. No matter how you enter the date, it will always be displayed using the format you chose when you set up the file. Times can be entered in military format or with AM or PM. Either way, the AM or PM indicator will show after you hit Return.

#3 An important section of the Superbase Professional 3 manual was inadvertently omitted from the Superbase Pro 4 and SBase4 Pro manuals. The section deals with command-line options and Icon ToolTypes. Some of these items do not have equivalents in either the SBase4 Pro menus or DML programing language.

The format and functions of the command line options are:

SBase4Pro [-c] [-r] [-fformname] [-p] [-s] [-z] [-l]

-c	Selects custom screen.
-r	Disables Returns (Chr$(13)) when writing to disk files.
-f	Loads specified form at startup time.
-p	Removes control panel.
-s	Removes scroll bars from SBase4 Pro window.
-z	Removes sizing gadget and disables window sizing.
-l	Sets interlace mode on for a custom screen.

Use the AmigaDos Stack command to set the stack to 20000 before running SBase4 Pro from the CLI or Shell.

The following Icon ToolTypes are also supported:

SCREEN=WORKBENCH	Use Workbench screen
SCREEN=CUSTOM	Use custom screen
SCREEN=LACE	Sets interlace mode on custom screen
RETURN=ON	Enables Returns
RETURN=OFF	Disables Returns
SYSTEM=NOPANEL	Removes control panel
SYSTEM=NOSCROLL	Removes scroll bars
SYSTEM=NOSIZE	Removes sizing gadget

#4 A new feature has been added to the SBase4.ini file that will allow greater control of screen pen colors when building custom database applications. This feature is explained in the Pens.Readme text file, which is automatically copied into the same directory as SBase4 Pro by the installation program.

#5 Since database file access is extremely disk intensive, a hard disk is highly recommended. Even a fast hard disk will benefit greatly from a disk-caching program such as Michael Berg's PowerCache shareware utility (PCACHE.LHA in Amiga User library 9 on CompuServe; file #22427 in GEnie's library 4). The more complicated the application, the more disk-caching software will help speed things up. □

—PR & JR

return to where it started, as in the following:

```
FILE "Payments"
GOSUB pastpayments
......
pastpayments:
UPDATE Pastdue.Payments = "N"
WHERE Due.Payments < TODAY and Pay.Payments > 0
END UPDATE
RETURN
```

This subprogram operates in similar fashion to the SBase4 Process/Update menu option, but works in the opposite order. The line beginning with UPDATE is the operation to be performed, such as marking up-to-date payments as not past due. The line beginning with WHERE is the filter line to instruct SBase4 which entries will be updated. The third line, END UPDATE, returns control to DML, while RETURN goes back to the program line beneath the GOSUB.

If you want to use check boxes or radio buttons in a form, DML can control them for you. When placing a check box or radio button, you set variables to make it go on or off, such as checkbox% = 0 for no check mark in the box, and checkbox% = 1 to display a check mark in the box. For example, the following program would turn on the check box:

```
checkbox% = 1
VIEW
END
```



DML can also extract information from your database and display it within a requester. For instance, if you want to know how much money is past due, a separate program could be put on a button marked "Due" as follows:

```
FILE "Payments"
SELECT WHERE Due.Payments < TODAY
SELECT FIRST
IF EOF ("Payments")) THEN REQUEST "No Past
  Dues!","",113,ok% :END
due% = 0
WHILE NOT (EOF ("Payments"))
due% = Due.Payments + due%
SELECT NEXT
WEND
due$ = "$" + LTRIM$( STR$ (due%,4,2)) + " is Past Due."
SELECT WHERE
REQUEST due$,"",100,ok%
FILE"Payments"
VIEW
END
```

This program sets a filter for any payments that are past due via the Select Where command in the second line. If the program doesn't find anyone who owes you money, it will bring up a requester with an exclamation-point icon in it that says "No Past Dues!" If it does find past-due payments, it will go through each entry with the program lines between WHILE and WEND. When the end-of-file marker (EOF) is not detected, it will add each past due amount to the variable due%. The program then turns due% into a text string and puts it into the Request command, as in: "$424.56 is Past Due."

You can also change the filter so the program can check past-due payments for a single customer, instead of checking all past-due accounts, as follows:

```
FILE "Payments"
SELECT WHERE Due.Payments < TODAY AND Customer
  Name.Payments = "George Smith"
SELECT FIRST
IF EOF ("Payments")) THEN REQUEST "No Past
  Dues!","",113,ok%: END
due% = 0
WHILE NOT (EOF ("Payments"))
due% = Due.Payments + due%
SELECT NEXT
WEND
due$ = "$" + LTRIM$( STR$ (due%,4,2))
name$ = CustomerName.Payments + " Owes"
SELECT WHERE
REQUEST name$,due$,100,ok%
FILE"Payments"
VIEW
END
```

The resulting requester might read: "George Smith Owes $37.85."

You can see that the filter in the second line and the wording in the requester (line 13) have changed, but the rest of the program is essentially the same. Since the program editor has cut, copy, and paste functions just like a word processor, such changes are easy to make.

The power of DML is virtually limitless. With more than 100 DML commands available, you can exercise nearly complete control over the operation of a custom database.

Fancy Forms

SBase4 Pro's extensive Form Designer can be used to create forms with far more advanced features and enhancements than those contained in our fairly simple examples. You can choose from a wide variety of screen resolutions, colors, and fonts. You can set text in italics, bold, or underlined. Fields can be labeled, outlined, resized, justified, moved about, and aligned to an adjustable grid. Create buttons, boxes, circles, and lines to enhance the on-screen aesthetics of your forms; sixteen area-fill types and six line types are available to choose from.

In addition, you can add depth and dimension to buttons and other gadgets, and you can also use standard IFF images as backdrops for your data. You can even control the object-display hierarchy of all the elements that make up a form. For example, text can be displayed over images, boxes, or circles. Each screen element can be made printable or nonprintable as you desire.

No matter what type of data you need to keep track of, or how simple or complicated the database required to manage it, SBase4 Pro can provide the magic to get the job done efficiently and effectively. Whatever your wish, this program probably has the command to grant it. ■

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The Best Things in Life Are...

Part Two concludes our C-language tutorial with more examples and a few pointers.



The best tools. The best support. The best cross-platform standards. All of these characterize C, the most widely used programming language in the industry today. C is well worth knowing, and last month we introduced a two-part series on the language that included a couple of examples. This article will expand on that introduction (if you haven't seen Part One yet, you might want to study that first; it begins on p. 39 of the May '94 issue). This time, I'll provide more complex examples of C and I'll offer some tips for going further on your own.

The Power of Functions: Example 2

In the previous examples, we used various types of functions. Now it's time to write one. The commands in Example 1 (see Part One) draw a box. A box is a pretty common shape—one you might want to use again and again—so why not build a C function that draws it? That's what Example 2 demonstrates. In all C programs, the C compiler wants to know about an item before it can use ►

By Dave Haynie

Illustrated by Joel Peter Johnson

Example 2

This example demonstrates user-defined functions by building one that draws boxes. This function then proceeds to draw four boxes of varying sizes.

```
#include "turtle.h"

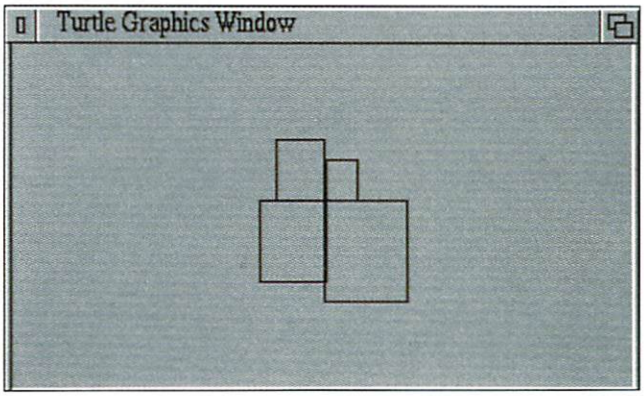
void box(int size) {
  PenDown();
  Forward(size);
  Right(90);
  Forward(size);
  Right(90);
  Forward(size);
  Right(90);
  Forward(size);
  Home();
}

void main(void) {
  OpenTurtle();

  box(50);
  Right(90);
  box(40);
  Right(180);
  box(30);
  Right(270);
  box(20);

  CloseTurtle();

}
```



Here's what Example 2 draws onto your screen.

that item, so first we must create the box() function.

Consider now the size of the box. It doesn't make much sense to write box() just to draw 50-pixel boxes. So box() is given a "parameter" variable. This parameter is called "size," and it is of type "int," which is C-language notation for "integer." Except for this, box() contains the same movement and turning functions as Example 1. An extra Home() call at the end returns the turtle to the home position so that subsequent functions don't have to figure out where box() left the turtle. Note also that the group of statements comprising box() are enclosed in braces {}. C uses braces when a set of statements are to be treated as a whole.

Finally, look at the main() function. First the turtle is opened, then box() is called. When box() is called, the parameter "size" is set to the corresponding argument value, which is 50. Next, the turtle is moved by 90 degrees, and box() is called with a value of 40, which becomes the value of "size" for that execution of box(). This continues for boxes of sizes 30 and 20.

While this example shows just one parameter, you can define C functions with many parameters. As we saw with the printf() function in the "Hello, World" example last month, parameters can be of various data types, not just ints. In C, all parameters are passed "by value." This means the parameter is a copy of the argument, not the argument itself. Parameters changed within a function have no effect on the argument.

Variables and Loops: Example 3

The box() function is modified in Example 3, though it still does the same thing. Here, a "loop" is used to repeat a set of instructions several times. The first line in box() declares a local variable, called count. This is created with no predefined value, and exists only within box(). A variable, whether local or parameter, behaves much the same way. Because count starts with no defined value, the statement "count = 0;" sets the value of count to the integer "0."

Count is defined as the "control variable" for our loop. C defines three kinds of loops; this kind is called the do/while loop, and it is always executed at least once. A set of braces defines a statement block for the loop, much as they have before for function definitions. This loop calls the Forward() and Right() routines. Next, it assigns the value of the expression "count + 1" as the new value of count. Since count was originally 0, its new value will be 1 once this statement is executed. When the "while" keyword is reached, the expression in parentheses is evaluated. In this case, the value of count is compared to the constant 4 by the relational operator "<." The result is 1 if the test is true, 0 if false. Execution passes back to the top of the loop as long as the result is not 0; otherwise it continues at the statement after the while () expression. Once count reaches 4, the loop terminates and the turtle is sent home.

The main() function shows a different kind of loop—the "for" loop. In C, this loop takes three statements. The first is run only once, before the loop starts. That sets the variable "angle" to 0 in this case. The next statement is a test. Before going through the loop, this expression is evaluated. If it evaluates to 0, the loop is terminated; otherwise a single pass is run. When one pass through the for loop is completed, the last statement is evaluated. In this example, the angle variable increments 20 degrees. The sequence continues: test->loop->increment, until the test produces 0. In the example, the loop finishes once angle reaches 360 degrees.

This illustrates the power of a loop. This loop executes 18 times as it is now set up. By simply changing the loop, different figures can be drawn with little change to the rest of the program. The next program shows this, with a different iteration mechanism.

Recursion and Command Parameters: Example 4

Our final example includes stdio.h and stdlib.h, two standard C libraries. A few C library functions are used here, though most C compilers come with hundreds of library functions.

Next comes an integer valued function, sub1(). This function takes an integer parameter, "num," and returns "num – 1." In a C expression, sub1(num) is

identical to (num-1). You would not normally write such a function in a C program; this is shown here to illustrate a function with a return value. More of these are used in "turtle.c" itself (see Listing A from Part One).

Following is the graph() function—an enhanced version of box(). Upon close inspection it should be noted that graph(size,0,90,4) is similar to box(size). Rather than use a loop, graph() is said to be recursive—it is used in its own definition. In early languages such as FORTRAN and BASIC, a function cannot call itself. In C, this is perfectly legal, and also quite useful. All recursive functions must have a termination case, just as a loop does. In graph(), the value of count is checked in an "if" statement. When the expression given to if evaluates non-zero, the statements in its block are executed. In this case, move forward by "size" pixels, rotate by "angle" degrees. Next, it calls itself with a possibly larger size, the same angle and growth rate, and a count parameter set to one less. This is the important part. Because count is always decremented, it will eventually reach zero, so the recursion will terminate.

This function is deceptively simple. When called with odd angles and large counts, graph() can produce complicated spiral pictures. The illustrated example was made by calling graph(1,2,256,300). Note that since the turtle graphics routines were purposely kept simple, graph() will often draw into the borders of its window. This may look ugly, but it doesn't hurt anything.

The main() function introduces a final concept. Until now, the examples have relied on constants you supply in main(). That's fine for some simple boxes, but if you're willing to play further with graph(), there is a better way. Most Shell programs, the C compiler included, take arguments on the command line itself, after the program name. C has a standard way of accessing this information. Until now, main() has been declared without parameters, but in fact, C can pass two parameters into main(). The first, traditionally called "argc," is an integer that counts the number of arguments passed (the count is always one more than the number of arguments). The second is an array of strings, each string corresponding to a command-line parameter. In C, a "string" is an array of characters of any length, ending in the '\0' character. In most cases, an array parameter can be written as array[] or *array. There is a distinction, but it isn't important at this point. In any case, the notation *argv[] indicates "argv" is an array of character arrays.

The main program first tests to see if the argument count is 5. In C, the operator "==" is a test for "is equal to," while "=" is the assignment operator. These are different in most other languages; be careful not to get them confused. As I mentioned, command-line arguments are passed into a program as C strings. The standard library function atoi() converts a string to an integer value, which is what graph() is expecting. You can produce the Example 4 picture from the CLI as

```
1> example4 1 2 256 300
```

This example also does simple error processing. If the aforementioned test on argc fails, the statement in the conditional's "else" clause is executed. This simply passes a string to the printf() function, which will tell the user the proper command-line format to use.

Going Further

I hope this article series has helped get you started in C language. While it alone cannot teach you any practical amount of C, a start may be all you need. With your C compiler installed and a little hacking with the turtle package under your belt, you may be ready to try more programming. Most compilers come with examples you can learn from. Compile them, change them around, learn how they work (see last month's "Resources" sidebar for more information on playing with public-domain sample code).

The sidebar "From Here to C" lists common functions in C along with their BASIC and Pascal equivalents. If you're familiar with another language, or just plain adventurous, you might try some of these.

I recommend getting a book on the C Language if you're serious and don't already have one. There are numerous books on C in the computer section of most ►

Example 3

Here is a demonstration of local variables and two different loops. This example uses the box function to draw a fancy graphic made by a loop of rotated boxes.

```
#include "turtle.h"

void box(int size) {
  int count;

  PenDown();
  count = 0;
  do {
    Forward(size);
    Right(90);
    count = count + 1;
  } while (count < 4);

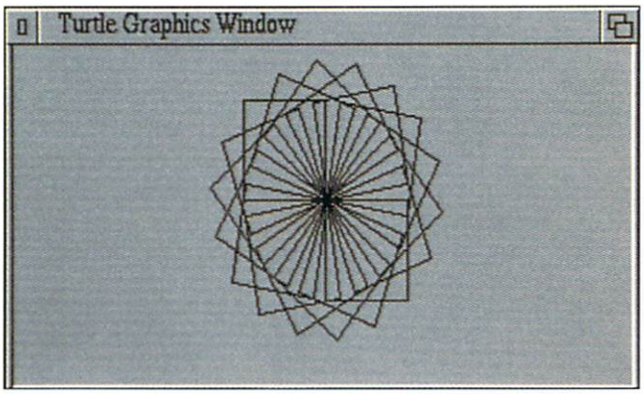
  Home();
}

void main(void) {
  int angle;

  OpenTurtle();

  for (angle = 0; angle < 360; angle = angle + 20) {
    Right(angle);
    box(50);
  }

  CloseTurtle();
}
```
►



Given a loop of rotated boxes, a turtle creates fancier graphics.

From Here To C

It seems to be popularly accepted that no one should learn the C Language as a first computer language. After all, C is terse, C is cryptic, C is for professional use only, isn't it? The answer, in a word, is no. C can be terse, and it can be cryptic (there's a contest for this held every year on the Internet), but it doesn't have to be. Nonetheless, lots of people do learn another language first. If you're learning on your own, you probably learn BASIC. In a school course, perhaps Pascal.

The same basic constructs are present in most computer languages. If you know one language, learning the second is much easier, though it is important to realize that some languages, particularly traditional BASIC, tend to encourage poor programming practices. Use what you already know, but try to learn what any new language adds to the art of programming. The table below summarizes some simple similarities.

Construct	AmigaBasic	HighSpeed Pascal	ANSI C
Structure			
Statement	by line	";" delimiter	";" delimiter
Block	no general blocks	BEGIN ... END;	{ ... }
Procedure	SUB p(x,y) STATIC	PROCEDURE P(x:type,y:type)	void P(type x, type y)
Function	N/A	FUNCTION F(x:type,y:type) : type	type P(type x, type y)
Comment	REM	(* ... *)	/* ... */
Data Declarations			
Integer	N/A	VAR i: Integer;	int i;
16-bit Integer	i%	VAR i: Integer;	short i;
32-bit Integer	i&	VAR i: LongInt;	long i;
Single float	f!	VAR f: Single;	float f;
Double float	f#	VAR f: Real; or VAR f: Double;	double f;
Character	N/A	VAR c: Char;	char c;
Dynamic strings	$	N/A	N/A
Fixed string	N/A	VAR s: PACKED ARRAY[0..n] of char;	char s[n];
Array	DIM a(n)	VAR a: ARRAY[0..n] of datatype;	datatype a[n];
Structure	N/A	RECORD ... END;	struct { ... };
Pointer	N/A	VAR p: ^datatype;	datatype *p;
Operators			
Basic Math	+ - * / ()	+ - * / ()	+ - * / ()
Modulo	MOD	MOD	%
Bitwise Logic	NOT AND OR XOR	NOT AND OR XOR SHR SHL	~ & | ^ >> <<
Boolean	use logical	use logical	! && ||
Relations	= <> < > <= >=	= <> < > <= >=	== != < > <= >=
Catenation	+	+	strcat()
Reference-to	VARPTR(a)	Ptr(a)	&a
Dereference	PEEK(p)	ptr^	*ptr
Selection	N/A	v.field	v.field
Index	x(a,b,c)	x[a,b,c] or x[a][b][c]	x[a][b][c]
Assignment	=	:=	=
Control			
Conditional	IF exp THEN	IF exp THEN BEGIN	if (exp) {
	...	...	...
	ELSE	END ELSE BEGIN	} else {
	...	...	...
	END IF	END;	}
Switch		CASE exp OF	switch (exp) {
		a : ...;	case a : ...; break;
		b : ...;	case b : ...; break;
		END;	}
Head Loop	WHILE exp	WHILE exp DO BEGIN	while (exp) {
	...	...	...
	WEND	END;	}
Tail Loop	N/A	REPEAT	do {
		...	...
		UNTIL (exp);	} while (exp);
Index Loop	FOR i = x TO y STEP z	FOR i := x TO y DO BEGIN	for (i = x; i < x+y; i = i + z) {
	...	...	...
	NEXT	END;	}

Example 4

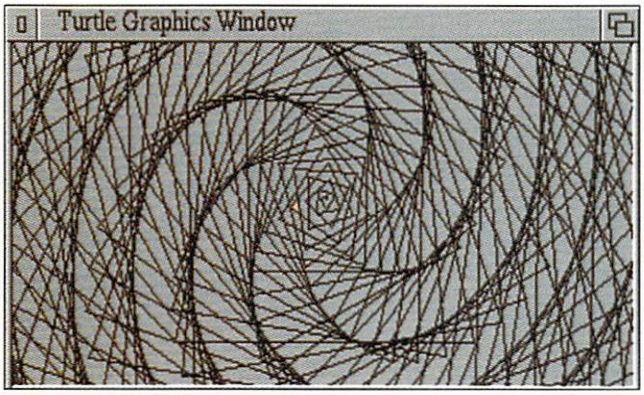
Recursion and command-line arguments come into play now. Example 4 defines a more flexible version of the box function; it uses recursion rather than iteration for its definition and produces complex Spirograph-type drawings.

```
#include "turtle.h"
#include <stdio.h>
#include <stdlib.h>

int sub1(int num) {
    return num - 1;
}

void graph(int size, int grow, int angle, int count) {
    if (count != 0) {
        Forward(size);
        Right(angle);
        graph(size+grow,grow,angle,sub1(count));
    }
}

void main(int argc, char *argv[]) {
    if (argc == 5) {
        OpenTurtle();
        PenDown();
        graph(atoi(argv[1]),atoi(argv[2]),atoi(argv[3]),atoi(argv[4]));
        CloseTurtle();
    } else {
        printf("Please enter size, growth, angle, and count\n");
    }
}
```



Spirograph? No, a turtle with a recursion-defined box function.

bookstores. *The C Programming Language* by Brian W. Kernighan and Dennis M. Ritchie was at one time the definitive work, but it is now dated. Most books provide an adequate reference, but make sure you get a newer one that mentions the ANSI standard. If the book follows ANSI, the examples it provides should all run on an Amiga with an ANSI standard compiler. ■

Dave Haynie works as Senior Systems Hardware Engineer at Commodore. His projects include the C128, every high-end Amiga system, and the A26x0 and A4091 boards. A long-time programmer, he is the author of DiskSalv and SetCPU for the Amiga. Write him c/o AmigaWorld Editorial, 80 Elm St., Peterborough, NH 03458 or via the Internet: daveh@cbmvax.commodore.com.

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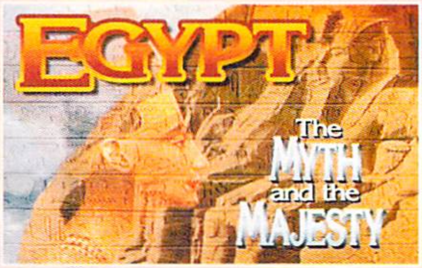
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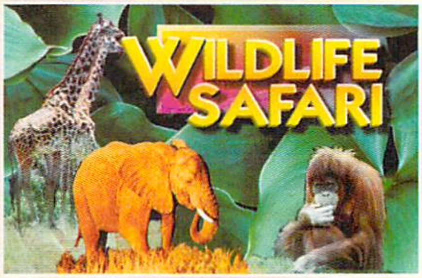
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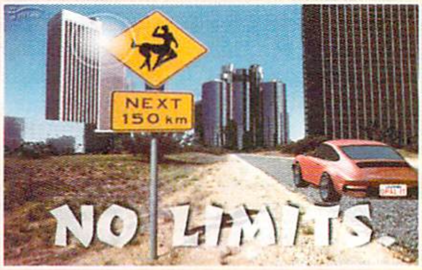
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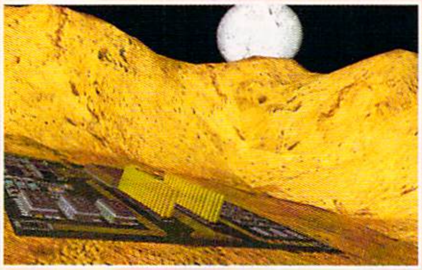
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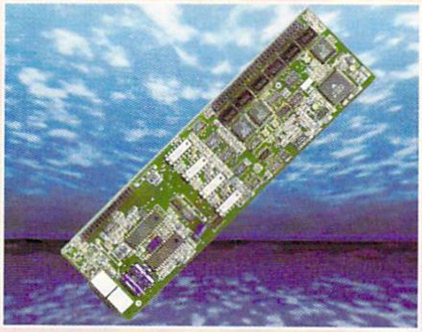
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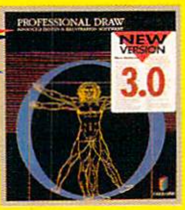
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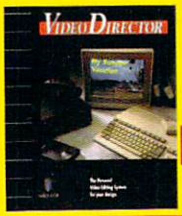


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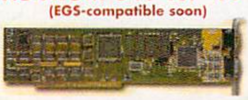


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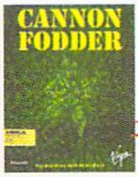
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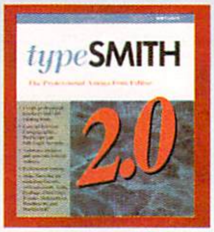
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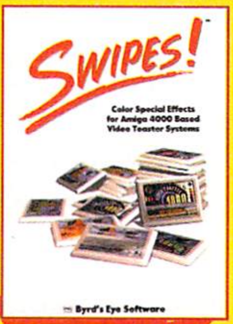
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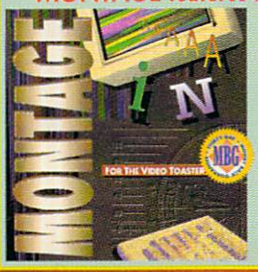


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Exploring the Alpha Channel

#64

A continuing series of tips, techniques, and tricks for creating more imaginative Amiga graphics.

By Joel Hagen

AN ARTIST PAINTING in any medium frequently makes use of masking or "frisking" techniques to protect areas of an image while paint is being applied. In film special effects, variations on this concept are used to composite multiple elements into one shot. Computer artists have especially versatile masking tools at their disposal in painting and image-processing programs.

Some of the more powerful of these tools make use of what is called an "alpha channel." If you haven't yet explored this area, it is worth a little time and experimentation to learn how to use the alpha channel effectively. It can add a new dimension to your artwork, photography, or graphic design. Three good programs to use for your experiments are ImageFX (GVP), Art Department Professional (ASDG), and Imagemaster (Black Belt). For this column I will refer to tools in ImageFX.

What's It All About, Alpha?

The alpha channel is an area of memory that can contain an image to be used as a friskit. Technically, this area of memory is called an eight-bit buffer. That memory "buffer" can contain a 256-color grayscale image. Masks in most paint programs are uniformly opaque. The power of using an alpha-channel image as a friskit is that the mask can have complex variations in opacity. The darker the area of that mask, the greater its opacity and the greater its tendency to protect the image on your screen. Any pure black pixels in an alpha-channel mask will totally protect the corresponding pixels of the screen image. Pure white pixels in the alpha channel will have zero effect in protecting the screen image. The alpha channel is often used in graphic design for applying effects to text, creating soft shadows or making complex stencils.

You can use any paint program to create a screen to be used as an alpha-channel friskit. Simply paint in grayscale using 2 to 256 colors. Remember, the darker the color, the greater the protection. You can also load digitized or scanned images as alpha-channel friskits. Using tools in your image-processing programs, you can even create screens from scratch that have the look of sand grains, water ripples, or other textures. Try the following experiments to explore some basics for using the alpha channel in your computer photography and painting. A future column will explore animation using the alpha channel.

ImageFX has particularly good alpha-channel support. For your first experiment, use it to add texture to a painting. First, create a grayscale texture screen by scanning or digitizing canvas, fabric, or coarse surfaced paper. Alternatively, follow the techniques outlined in Accent #45 (Nov. '92, p. 58) for producing hand-made natural textures. Using the Alpha button, load this image to the alpha channel. Next, via the Buffer button, create a working screen the same dimensions as your alpha screen. Double-click any of the painting tools and turn on the Alpha gadget. When you paint on the main screen, the texture of the image in the alpha channel will be visible as part of the "paint" you are applying. This can give your computer paintings the illusion of having been done on a textured surface. Double-click one of the painting tools again and experiment with different Blend and Mode settings. You can give soft edges to your strokes and fills by setting Edge to Feather Out.

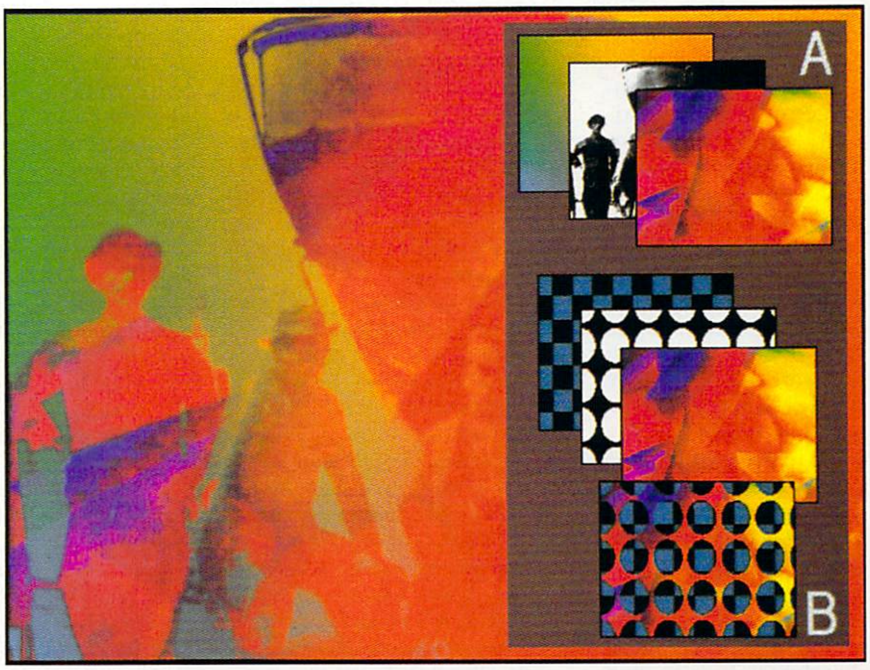
One of the more interesting uses for the alpha channel is as a mask during compositing. An image loaded to the swap screen can be merged with the image on the main screen using the alpha channel to control the blend. This is a simple procedure but the results of random experiments are often confusing.

To see clearly how the alpha-channel affects an image, try the following experiment shown in sequence "B" in the accompanying illustration. Use a paint program to make a checkerboard screen and a screen of large white circles on a black background as

Making use of an image processor's alpha channel can lend powerfully effective new dimensions to your images.

shown. In ImageFX, load the checkerboard to the main screen. Press the j key to swap screens and load any colorful painting or photograph. Next, hit the Alpha button and select Load to put the circles screen in the alpha channel. Think of the alpha channel as protecting the main screen from the image on the swap screen. Now select Composite and set Alpha to Use As Friskit. Select Merge, with Blend at 100%, and press the Okay button. The areas of the checkered screen behind the white holes are painted to the main screen while all areas that are black in the alpha channel protect corresponding regions of the main screen.

Try the same experiment with an alpha-channel image in which all the circles are filled with different shades of gray. The result will clearly verify that the darker the color in the alpha channel, the greater the protection to the main screen image. Next, use a black alpha screen containing bold display text in which each letter is filled with a vertical gradient from black to white. Patterned text fades into the foreground image.



Sequence "A" shows the main and swap screens in ImageFX with a grayscale photograph in the alpha channel. The large image on the left shows the result of merging the screens using the alpha channel as a friskit. Sequence "B" shows a simple experiment to clarify the relationships of the three image buffers.

Alpha Logic

For your next experiment, add complex colorization to a grayscale photograph as shown in sequence "A" and the large image (left) in the illustration. Random experiments can be confusing, but if you are logical you can retain the structure of a photograph in the alpha channel. Remember the alpha formula: dark protects. Use a darker or more saturated picture on the main screen and a lighter image on the swap screen. Dark values in the alpha channel photo protect the dark main screen. Light values in the photo allow the lighter swap screen to blend through. The result is a discernible version of the photograph rendered in new colors and patterns. A common mistake during this procedure is to use images for the main and swap screen that are too similar in complexity and value. One screen or the other should be fairly free of busy patterns and value changes, and the swap screen should be lightest.

Another way to add the color and pattern of a painting to a black-and-white photo is to load the photo, copy it to the alpha channel, use Color/Negative on the main image, and then swap it back with the alpha channel. This leaves the original photo on the main screen and a negative of the photo in the alpha channel. On the main screen, from the Color button, select Grey-To-Color so that compositing is in color. Use a dark, colorful picture on the swap screen and merge the two as described, with Alpha set to Friskit. This brings the swap screen into the dark areas of the photo and is a fairly reliable way to retain discernible images.

An even more predictable method is to copy the photo to the alpha channel and again select Composite. This time, however, set Alpha to Use As Texture. This method blends both images accross all values while retaining the structure of the main screen.

I have used a photograph as an example, but obviously these merging techniques work just as well with painted images. My favorite of these methods is the first, as shown in sequence "A." It is quite sensitive to errors of judgement, but gives you the greatest creative control. There is an appealing elegance to having the image with which you are concerned hidden in the alpha channel. Under your control, its form is revealed through its effect on two other images. The result is a satisfying combination of intent and accident. ■

Write to Joel Hagen at 10512 Sawyer, Oakdale, CA 95361. Please include a stamped, self-addressed envelope for a reply.



Video in Focus

PRACTICAL ADVICE FOR AMIGA VIDEO PRODUCERS

By Paulo de Andrade

#1— First Stop: NAB and The Future

Welcome to "Video in Focus." As the tag line for this new column suggests, I'll be trying to provide help to Amiga users involved in the many different aspects of desktop-video production. Such advice may be in the form of tips and techniques, or it might be recommendations of particular products and equipment that can make your production work better or easier.

The column will not be "product-specific" to any piece of equipment except the Amiga. It will indeed provide coverage of the Video Toaster, but since not all of our readers are Toaster users, we will cover alternatives to this popular system, as well. We hope that the topics presented here will benefit users of any Amiga model.

To kick off the column, I will take you on a quick tour of the recently concluded National Association of Broadcasters' convention. As the largest and most important show of its kind in the world, NAB is a good place to see what's happening—and about to happen—in the world of video. After all, the technology and equipment on display there is likely to influence the kinds of things this column will cover in future months.

Definitely Out of Line

Probably the hottest topic at NAB this year was nonlinear editing (NLE), as every major manufacturer, as well as several smaller ones, displayed such systems. NLE allows you to play your source tapes into your computer and store tham anywhere on your hard drive, allowing you then to play them back in any order—from disk, not videotape. Nonlinear systems break the traditional (linear) editing sequence—where you assemble a video by copying a series of scenes from the original tapes to an edit master. Because scenes must be recorded one after the other, once a few of them are laid down on .he edit master, it is very difficult to go back and change one without having to alter the rest of your material.

Nonlinear editing systems are much like word processors for images. You can cut, copy, paste, insert—easily editing any scene no matter where it is in the program. (We'll tackle the NLE process next month, and discuss its pros and cons versus more traditional methods.)

While several nonlinear editing systems have been developed for Macs and PCs recently, most have not matched the manufacturers' claims of being broadcast-quality. However, NewTek, the company that initiated the desktop-video revolution with its Video Toaster, announced another breakthrough product—the Video Flyer—a broadcast-quality, NLE for the Amiga. Although Digital Micronics, another Amiga developer, had billed its previously announced Broadcaster 32 as an NLE, the Flyer—in my opinion—is the only one that can be regarded as a true, complete nonlinear editor.

The first thing to note about this revolutionary product is its price, reported to be under $4000. Similar systems for other platforms start at $10,000 and can easily reach six figures. Even allowing for the addition of some necessary extra hardware, this new system will end up costing many thousands less than a traditional edit suite. The prototype shown at NAB sported a very intuitive interface designed to have even a novice editing in no time. In addition, the Video Flyer claims D-2 quality (a high-end broadcast-quality digital videotape format).

If the Video Flyer's impact is anything like that of its illustrious cousin, it will only further convince large equipment manufacturers that there is a huge market for affordable high-quality video-production equipment.

Gear! Gear!

On the VTR front, two major players—Sony and Panasonic—introduced high-quality entry-level lines. Sony showed its new UVW line of affordable Betacam SP decks. Panasonic, however, introduced a new line of MII decks, the W series, which are priced in the same range as the UVWs ($10,000) but offer more features—including autotracking—and quality comparable to that of much more expensive units. Panasonic also released an auto-tracking S-VHS deck, which enables the user to vary the play-back speed of the video from a still frame to double rates, plus double speed backwards, all with perfect picture quality.

Another revolutionary new S-VHS product on display was Panasonic's Supercam, the first camcorder in its class to offer digital signal processing. In addition to providing features found previously only on much more expensive units, this 3CCD camera can also deliver good pictures in extremely low-light situations.

Centaur demonstrated its long-awaited OpalVision complete video suite. It features a very nice 3-D DVE (digital video effects) module, plus programmable keyframes and better (but still not perfect) image compression than the Toaster. The DVE lets you rotate live video images in real time on all axes, much like a professional DVE such as the Ampex ADO or the Abekas A-51. A nice touch to the DVE module is a 3-D interface, which allows you to change the angle of view and visualize the series of keyframes you assign to an effect in 3-D space. The whole package, including the main board, OpalPaint, a five-channel audio mixer, and the Montage 24 character generator, runs $2600.

Attending a show such as NAB is like looking into the future: Today's expensive, leading-edge products will eventually find their way into more affordable desktop systems tomorrow. As computers become more powerful, they will continue to replace costly traditional equipment. And that will benefit all of us. ■

*Paulo de Andrade is president of Digital Reality, an Amiga-based broadcast-video and 3-D animation company in Seattle. Write to him c/o **AmigaWorld**, Editorial Dept., 80 Elm St., Peterborough, NH 03458.*

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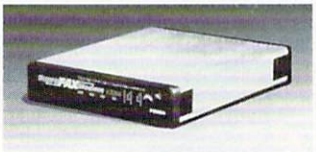
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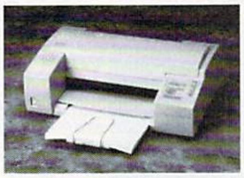
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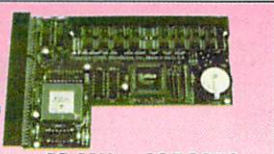
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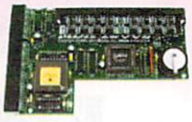
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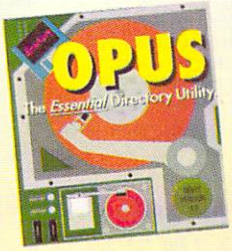
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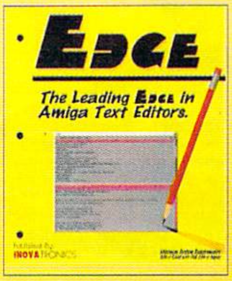
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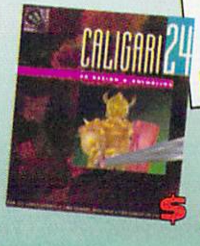
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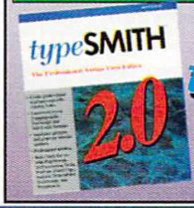
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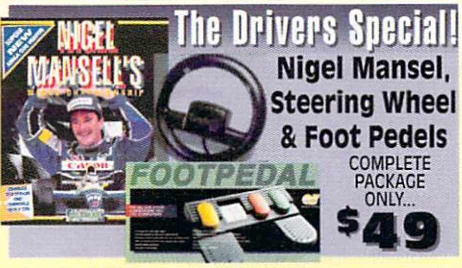
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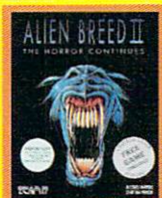
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From p. 19.
The hardware, about half the size of an audio cassette, accepts line-level input through RCA-type plugs and offers an external volume control.

Command Performance

To create a sample with Megalosound, click on the Sampler button, select the oscilloscope to set your levels, and then record. Options include starting the samples when a certain volume level is attained and defining how much RAM is used for a sample.

There's a Continuous Mode that uses the available memory and then loops back to the beginning of the record buffer to continue recording. This is helpful if you're uncertain of a sample's length or when it starts. A mouse click ceases sampling in this mode, and the software then pastes the pieces together into one sample. The accompanying Mtask program lets you hear the incoming signal without freezing the screen.

Most of the command and display tools you'd expect are here. You can define a range, zoom in and out, set repeat markers, cut, copy and paste, transpose the sample up and down an octave, and make the sample louder or softer.

The file requester is especially complete. Not only can you load and save files, but also you can perform many Megalosound and AmigaDOS functions directly from the panel. In a variety of ways, you can merge a previously saved file with the sample currently in memory. Without returning to the Workbench, you can delete and rename files, create directories, format disks, or open a shell.

Sight and Sounds

Megalosound lets you print the sample and any accompanying information. You can print in black and white or color, with outlined, filled, or dotted graphs. Prints can include the display, the entire waveform, the range, or just the area between the repeats. The graph can be stamped with date and time and printed with or without grid, axis, or repeat markers. With your printer port hooked up to the Megalosound sampler, you'll need a card that adds an additional parallel port, or a serial printer.

The package provides 24 different effects (applied, however, only to ranges) with which to process your sample. The usual reverb, echo and flanging are present, as well as Metallic. Portamento shifts the pitch of a range up or down in discrete steps, while Pipe makes samples sound as if they were recorded through a long tube.

Although Megalosound does a good job of making and editing eight-bit samples, I have, as always, a wish list. While the undo feature is nice, it merely reloads the last saved sample. More useful would be canceling an operation in process or undoing the last action. Also, a parallel-port pass-through is needed if you plan to use the printer option simultaneously.

Virtual screen support would make it possible to see all three of the menu panels at once. As it is now, shuffling these panels is a nuisance, for you cannot resize them or move them from the bottom third of the screen. Also, keyboard equivalents for the most frequently used commands would be an improvement, the Flange effect could use a rate control, and the Chorus effect did not work properly and should be fixed.

On the whole, you have a great deal of control over how Megalosound works and looks. The sound quality is first-rate, options abound for recording and manipulating samples, and the manual is quite good—with well-written tutorials. While this isn't a ground-breaking sampler package, you really can't go far wrong with it at the price.

—*Rick Manasa*

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DKB 4091

DKB, $395.

Amiga 4000.
3.0 and higher compatible.
Hard-drive installable.
Not copy protected.
Accelerator compatible.
Installation: **Moderate.**
Minimum system: **1MB, A4000.**
Recommended system: **A4000, hard disk.**

Zorro III hard-disk controllers.

Advanced Systems & Software's Fastlane Z3 and DKB's 4091 are Zorro-III, SCSI-2 Fast hard-disk controllers designed for the A4000. For those who may not know, SCSI-2 is a bus design identical to the older SCSI-1 (found in controllers like the Commodore A2091) but using an expanded command set. SCSI-2 Fast is SCSI-2 with a synchronous bus mode that allows transfers up to a theoretical maximum rate of 10MB per second. All SCSI-1 devices should work with SCSI-2 Fast controllers, but only in the slower, asynchronous mode. Physically, both the 4091 and Z3 are surface-mount designs.

Meet the Players

The 4091 uses a standard SCSI-2 high-density 50-pin connector and offers sufficient space to accommodate a hard drive. It includes HDToolBox and Installer script software, a short SCSI cable, a SCSI-2 active terminator, and a cable for the A4000's external hard-disk LED. By contrast, for external devices the Z3 uses a 50-pin Centronics-style, or "printer," connector that makes the board difficult to install.

The Z3 uses older passive termination, which works fine for asynchronous-mode transfers or for short cables. With longer cables and synchronous-mode transfers, the more sophisticated active termination is necessary. Technically inclined users could remove the terminating resistors on the Z3 and add active terminators to both ends of the SCSI bus. The Z3 has its own partitioning and software, and the manual explains that you must experiment with the configuration to optimize performance. The disk also includes RAM-cache software that dramatically increases performance.

Caution: Test Area

I tested both controllers with a 1.7 gigabyte Seagate Barracuda ST11950N and a DEC DSP3107LS (just under 1GB). Unfortunately, the Barracuda won't fit on top of the A4000's IDE drive or on the 4091. The Barracuda offers 7200 RPM speed and a seek time of 8 ms. With 1MB of cache RAM, most reads and writes occur at the speed of RAM. The DEC drive spins at 5400 RPM, has a 9.5 ms access time, and offers 512K of cache RAM.

MKSoft's freely distributable DiskSpeed 4.2 is commonly used to measure SCSI-1 hard drive/controller performance. Its default tests are not adequate to compare the true performance of the SCSI-2 Fast drives and controllers. A statistical weighing of tests, including those with and without CPU-usage monitoring and including larger (1MB) reads and writes, would produce more accurate results.

Nonetheless, with CPU-usage monitoring on, DiskSpeed reported that the

Z3/Barracuda combination performed 256K reads at about 4.9MB/sec, while the 4091 recorded about 4.5MB/sec. The Z3 performed consistently faster than the 4091 with the Barracuda, but the difference was less pronounced with slower drives. I noticed no subjective performance difference between the SCSI-2 controllers in real-world usage.

Investigative Reporting

If you want to add more RAM, the Z3 lets you add up to 256MB. While you can't add RAM to the 4091, DKB sells its DKB-3128 Zorro III RAM card, which accommodates four standard 72-pin SIMMs in 1x32, 2x32 or 4x32 sizes. The 4091 does a good job of handling removable media and nondisk devices, and Z3 should also work with them, but be sure to check with the vendor about your particular device before purchasing either controller.

Zorro III DMA and high-speed drives compound existing serial-port problems in the A4000. In performing 14.4K downloads to drives attached to each controller, I noticed increased errors. The Z3 manual suggests that if you experience serial problems, avoid using drives connected to the Z3 during serial-port activity; so for those who use MIDI devices, be forewarned.

I had problems with the manuals for both controllers. The 4091 manual uses a thin, condensed font, has poor reproduction, and is fraught with grammatical errors. It also omits some figures, including several of the jumper-setting diagrams. The Z3 manual is much better detailed, but is burdened with inferior photos and occasionally with poor German-English translation. Both manuals gloss over issues regarding Buster chips and CPU cards. On the plus side, both manufacturers offer good tech support.

Recommendations

Enforcer and Mungwall, Commodore's software-based troubleshooters, did not report any "hits" with either controller. Both controllers performed flawlessly, with the Z3 having the edge in speed, RAM expansion, and caching software. The 4091 has space to mount a drive, uses better connectors and active termination, and costs less. If you can afford a SCSI-2 Fast drive and controller, you can't really go wrong with either card. If you crave every last bit of speed and like to spend time optimizing settings, the Z3 is it. If you're well-stocked with RAM, and favor plug-and-play convenience, you might prefer the 4091. However, if you already own SCSI-1 devices, and don't need the potential for 10MB/sec performance, you'll save money sticking with a standard SCSI-1 controller.

A Note on Busted Busters

Because of a Zorro III DMA bug, you need a Buster revision I (-11) or later chip to use the 4091. If you have an early Amiga 4000, it's probably equipped with a surface-mounted Buster -09, which means you have no choice except to swap the old motherboard for a newer one. The Z3 works with the older 09-revision motherboard and Buster chip, but you'll find it operates about 20% slower.

According to a Commodore representative, the US company's policy on motherboard upgrades is simple: they're free to customers who purchase a Commodore or DKB 4091 while their A4000 is still under warranty. As always, your best bet is to check with your dealer for replacement motherboards for A4000s out of warranty. ■

—Dale L. Larson

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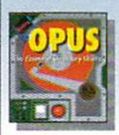
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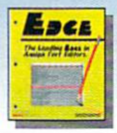
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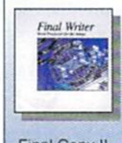
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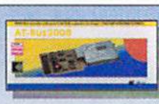
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The Game Preserve

By Peter Olafson, AW Games Editor

THE SETTLERS

A–
1.3 ✓*
2.0 ✓*
3.0 ✓*
Hard-drive installable.
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GENESIA

B–
1.3 ✓*
2.0 ✓*
3.0 ✓*
Hard-drive installable.
Copy-protection.

IF POPULOUS WAS about influence, its successor "God sims" have been progressively more about control. The intricacies of little-computer-people life that were assumed, made abstract, or just ignored in the earlier games have been given progressively greater rein.

The two most recent exponents of this school are **The Settlers** (***Blue Byte***, about $35), which will control your life for as long as you play it, and **Genesia** (Microids, distributed by ***Mindscape UK***, about $35), a more expansive game hinged to a weaker game system . . . and to some PAL-related technical foibles.

Genesia's worth a look, but you will love The Settlers, which is . . . well, like life (medieval life, anyway). You find an area with a nice mix of minerals in the surrounding mountains, forest, and rock outcroppings close by. You put down a castle and the basic buildings necessary to expand your domain and connect the latter up to the former with roads.

And it's off to the races as an ever-greater horde of tiny men dressed in cyan (your national color) and carrying supplies emerges to do your bidding. Construction workers with shovels smooth the land around the foundations, and, when the right supplies turn up at the site (hauled there on the shoulders of said little men), start erecting the wooden skeletons. Farmers plant seed, harvest wheat, and drop bundles off for carting to the mill. (It's reduced to grain, which is in turn carted off to the pig farms for use as animal food or to the baker for use in bread.) The woodcutter cuts down a tree, chops it up where it has fallen (leaving branches behind), and carts off the log to the sawmill, where we see it being sliced up into lumber, which in turn is carted off to various building sites around the kingdom.

And I haven't even mentioned the four different types of mines or the frontier-extending guard huts or the other players—another person or up to three computer opponents—who are up to the same tricks at the same time. In a fully involved game, there are hundreds upon hundreds of little men on the move, each (if you're doing your job) with his own agenda.

This must be what the Lemmings do on their days off. It's all helped along immensely by a pure mouse interface, real-time structure, and wealth of watch-me details: thick columns of smoke pouring from industrial establishments, wind rustling the trees, little faces appearing at work within buildings, products piling up outside businesses and at crossroads (not to mention the horrendous traffic jams they create), the maturing buildings under construction (and the maturing shadows as well), and free-flowing (until you start building roads in earnest and discover its underlying hex-based nature) environment.



Take control of the lives of your computer subjects in Genesia.

The compulsive player-program relationship that the game encourages does eventually turn up a few flaws. The 113-page manual is thorough, and even makes pleasant light reading, but is strangely obtuse on certain points (possibly issues of translation from the German) and badly needs an index. Combat is unduly simple: usually a series of set-piece, one-on-one sword fights with residents of the targeted guard house or castle, rather than open-field battles. It's as though you were fighting just for permission to cross a bridge rather than practicing scorched-earth tactics. The four types of knights are defined purely by level of strength rather than equipment.

For all the meticulous attention that's gone into the economy and terrain, it's odd the designers didn't include research and development, trade, diplomacy, and seasonal weather. Once you've soused out the economic interdependencies and the enemy personality profiles—none of which are all that deep—the game doesn't hold many surprises.

And long about my third mission, I began running into occasional slowdowns, then pauses, and finally regular, reboot-requiring lockups. The first two appeared simply the result of the game biting off a bit more animation and sound than it

Continued on p. 76.

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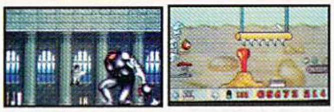
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From p. 72.

could chew, but the last appeared linked to the corrupting influence of segments of enemy roadway that post-combat border readjustments left intact in friendly territory.

Fortunately, I had lots of saved games and was able to finish the mission, but I lost many hours of play backtracking to find one that pre-dated that particular border shift, and the bug ultimately wound up dictating whom I attacked and where. However, I've heard of other people playing far more extensive games, with around 300 guard huts, and encountering no problems at all, so perhaps I was just unlucky in my choice of starting locations. The Settlers is a wonderful game that will make you late for just about anything you could mention (except breakfast). Hey, productivity is way overrated, anyway.

What do you mean, I'm not done? Oh, wait. You're right. I almost forgot Genesia. And that's quite a trick, because Genesia has all the elements I was complaining about being missing from The Settlers and others to boot—like the ability to put up houses and a fantasy adventure-like sub-plot that involves hunting down lost jewels. However, Genesia also has this terrible character flaw: It's dead boring. It takes a very long time to build the buildings needed to get your kingdom underway, and by the time they were ready, I usually wasn't in the mood. The turn-based structure and tile-based landscape, while attractive (love the surf effect), gave me the feeling I was playing an elaborate but rigid board game.

I did like the powermonger-like ability to tell who lives in each house and to be able go inside certain buildings: the workshop to deal with inventions, the barracks for government, the temple for morale and fertility, and the tavern for advice on where to find the jewels. However, for the most part, this is ornamental, and might have been dealt with just as easily in menus on the main game screen.

Beyond that, it was a good while before I was able to just play Genesia, and that's only because I was lucky enough to have several Amigas and monitors to test it on. Some element always kept tripping me up. On the A500, the mouse cursor couldn't reach the top item on the construction menu. On the 3000, the cursor was invisible. (It worked fine only on the 1200.) And while it runs from hard disk, you still have to boot your machine with a floppy. How medieval.

MICROCOSM

B–
CD32 ✓
Other Amigas –

YOU COULD SAY it's a 3-D shoot-'em-up with pretty pictures and blow-out-the-windows music and sound. You could ask where the gameplay is hiding. And you could argue that **Microcosm** (***Psygnosis***, $59.95) simply repeats the mistake of countless CD-ROM games that rely on effects at the expense of interaction.

But on one thing there should be no dispute: This flagship CD32 release from the flagship Amiga game publisher is like nothing you have seen on this machine or its brother Amigas. If it does nothing else, it will capture your attention. And if it doesn't capture your attention . . . well, it may be time to change your medication. Microcosm, mistakes and all, has a ►

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Microcosm takes you on a fantastic voyage where you experience thrilling sounds, scenes, and music.

room-filling presence that cannot easily be dismissed.

This fast-moving tunnel-vision blaster finds you controlling a range of miniature subs (and, in certain areas, just your pressure suit) on an inexorable voyage through five sections of the human body—specifically, the body belonging to the president of Cybertech (the leading corporation on planet Bodor). The mission of the solemn-faced pilot is, like a good antibiotic, to knock out infection, but also to track down the intruders injected by rival Axiom with the aim of controlling Cybertech's chief.

So off you go, accompanied by a pounding score by Rick Wakeman, with a halo of light illuminating the walls—a very fleshy-looking construct—and enemies approaching from ahead and behind. You dodge them and shoot them, steer clear of tunnel blockages, consult the map, and, at junctions, pick from among up to three paths to a way station where you steer smoothly through photo-realistic scenery, fill up on oxygen and power, and zap to other sections of the body. If you don't last long . . . well, the death scene is quite splendid.

What Microcosm achieves here in terms of speed, depth of field, and lighting is nothing less than spectacular, and easily superior to the IBM version, which blacks out the deepest, darkest level of the view. (In the CD32 version, something always seems to be emerging from out of the shadows.)

But I do think some elements might have been better handled. For one, I wish the designers had taken their cues from a shoot-'em-up like, say, Awesome, which always seems to be evolving. Microcosm, with enemies like pieces of some potentially throat-clogging child's toy (and a pitiful white-flash excuse for explosions), is rather too much of the same sort of thing. It's like a long-distance drive with trees enclosing the road on both sides: The scenery is all alike—how about some nice, cholesterol-clogged arteries to fly through?—and however convoluted the tunnels may get, you never seem to have to steer. The way stations might have broken up the monotony, but the view here is only forward, and without full rotation and much of anywhere to go, it's more like an interactive demo than a genuine sub-game.

They've also overlooked strategic possibilities involving the health for the patient. (If you scrape the walls too hard and too often, would you set off internal hemorrhaging? If you set off too many "smart bombs" in the brain, does Cybertech's president turn into Homer Simpson?) And a first-person perspective, from within the craft, would have been much more com- ►

To locate vendors of the games reviewed, see the "Manufacturers'/Distributors' Addresses" list on p. 94.

pelling than the third-person one from behind it. Viewed from the exterior, the submersibles seem rather like bumblebees, and buzzing them around the circular playfield feels trivial.

Moreover, it's not the most original concept. Centaur Software did the miniaturized-sub routine in the handsome and difficult sideways-scrolling shooter Fantastic Voyage (based on the movie) back in 1991. And you don't need the power of a CD32 to play a great 3-D blaster with fast graphics. The tunnel sequences of last year's Stardust (from Bloodhouse) run just fine on an unaccelerated A500.

But while it's easy to find individual elements wanting in Microcosm, it's not so easy to take it apart. The triumph here isn't so much the huge movie-like intro or the seamlessly integrated cut-scene video sequences or the hypnotic effect of the tunnels. It's the peculiar solidity of construction. Microcosm is to shoot-'em-ups what Labyrinth of Time is to graphics adventures: a consummate package where sound and graphics and game fold smoothly into one another until no one's the wiser.

So, sure, if you say it's a 3-D shoot-'em-up with pretty pictures and blow-out-the-windows sound, I'll agree. (And nothing particularly wrong with that, either.) And if you ask where the gameplay is hiding, frankly, I'd wonder along with you. But if you argue that Microcosm relies too much on effects, you're on your own, chum. They're swimming alongside each other, arm in arm, hand in glove, joined at the hip. There may not be much to Microcosm, but it's a rock.

CD32 GAMES

Wing Commander

A–
Other Amigas √

At last. Wing Commander (*Electronic Arts UK*, price not available) on the CD32 is the *real* Wing Commander. This classic space combat game has the 256 colors of the original IBM version (rather than 32 of the disk-based Amiga version)—especially noticeable in the scenes aboard your spacecraft carrier, the Tiger's Claw.

Indeed, it's better than the original. For even more fetching than the graphics is the absolutely amazing CD-quality music—especially when hooked up to a decent stereo system. (I mean, just listen to that bass line!) John Williams, eat your heart out.

Otherwise, everything's in place: the tree-based structure, the multi-stage missions, the titanic explosions, the dodge-ball games of the asteroid fields, and frenetic engagements with hordes of Kilrathi ships. Wing Commander CD32 (which appeared slated for the US bundle at press time) is a resounding confirmation of greatness.

On the other hand, it's slightly slow, but still far faster than the original was when played on the A500. And I can see I'm not going to be using my radio much. To send a message, you have to hold down the right top button, push the green one to bring up a menu, toggle through the choices by repeatedly pressing the yellow one, and push the green one again when your choice is highlighted—all the while fending off hungry kitties. You guys did test this part, right?)

Amiga CD32 Sports: Football

D
Other Amigas –

Cinemaware bit the dust years ago, but its legacy is very much alive.

A quick look at the credits for this glitzy gridiron game (*Commodore Electronic Ltd.*, $39.95) identifies it immediately as a spin-off of the late

MORE CD32 GAMES

great Amiga publisher's planned TV Sports: Football II. Originally intended as a CDTV title, it offers optional full-screen video sequences for everything from touchdowns to the coin toss, around 100 plays, and players who look more like real human beings.

Nice, nice, and nice. But where's the AI? I've yet to see a computer player returning a kick do anything other than head straight up field into the arms of a tackler. In my first game, I scored 20 points . . . in the first quarter. And I'm not even especially good at these things.

They've centered the view of the field on the offensive line—irrespective of who's controlling the ball at the time—and chosen an ugly orangish spotlight as the method of highlighting the ball carrier (or intended receiver). The 28 teams are fantasy creations from the US and Europe and made up of folks like "Edward Gormley," and there's no way to edit them. Undocumented feature: The controller has to be plugged into the #2 port or the menus scroll ceaselessly.

The slightly grainy video sequences (using CDXL) are a high point. They're pleasantly goofy. Maybe this should be called Amiga CD32 Parody: Football. The cheerleaders chant, "We're gonna punch their lights out/When the ref ain't looking," and the half-time commentator says something along the lines of, "This team may come back in the second half. Then again, it may not." And the manic coach who introduces you to the game is . . . well, he's certifiable.

However, this is next to nothing to do with the game itself, and I'm afraid there's not much to the actual football part. I can't hold the absence of the traditional TV: Sports league mode and stat compiler against it—the CD32 has the memory of a hamster when it comes to saved data—but this is exactly the sort of game Cinemaware was rightly nailed for releasing with the original Defender of the Crown: more looks than substance. They never learn.

Castles II: Siege & Conquest

C–

Other Amigas √

My big complaint about Castles was that there wasn't enough to it. The castle construction itself was great fun—little men walking hither and thither—and the sub-plots made it all feel meaningful for as long as it lasted. But this was really just the core of a game, and it petered out just when it should have been really getting underway.

Castles II (*Interplay UK*, about $35) aims to correct those shortcomings by broadening the original's field of fire. They've exported the game to 14th century France, added to the castle-building a game of conquest (and a raft of related "tasks" in three areas), and included more elaborate resource management and more sophisticated weaponry. (You can now build catapults and siege towers.) And more besides.

Trouble is, the game is now quite horrifyingly slow, and the designers, in the rush to conquest, seem to have forgotten where the game came from to begin with: Castles, remember? The castles here feel disembodied—products of a finite and satellite sub-section insufficiently tied in to the world and its economies. It's as though they've been run out of their own game.

Mean Arenas

B–

Other Amigas √

A televised Pac Man, with people in place of the munching yellow face and pursuing blobs and puzzles in place of the dots, more or less. In this futuristic game show (*International Computer Entertainment*, about $35), you'll tour a series of dot-filled mazes, finesse your way into closed-off areas, collect innumerable specials, fry opponents, and do your best avoid a turn in the frying pan yourself—all to the accompaniment of silly digitized commentary from the two hosts. It's hardly a 3DO killer, but it's also hardly straight PacMan, and is an enjoyable departure from standard CD32 fare that may give your brain some awkward moments.

Seek & Destroy

B–

Other Amigas √

The coders behind Desert Strike shouldn't lose any sleep over it, but you may lose a bit: Seek & Destroy (*Mindscape UK*, about $35) is a neat overhead-perspective shoot-'em-up that has you roving the desert in your Apache chopper, burning down everything in sight. It's always fun to be able to move through 360 degrees, rather than just following a game's fixed agenda, and classy fireballs, plentiful enemies, and digitized condition reports add to a ferocity of the experience. S&D's substantially better than Codemasters' Firehawk (which seems primitive by comparison).

However, S&D CD32 is virtually the same game that was released for standard and AGA Amigas. This is one big beige desert, and you'd think they would at least have added some ground detail.

Whale's Voyage

D–

Other Amigas √

Whale's Voyage (*Flair*, about $35) enjoyed a certain distinction as the first RPG released for the AGA machines. That honeymoon lasted about as long as it took to crack the cellophane. The game world, distributed among six planets, was sizable and the graphics pretty. (The 3D view when you beam down to planets puts me in mind of Hired Guns.) But gameplay was anorexic, the translation from the German sometimes iffy and the program was prone to glitches, crashes and simply not working.

The good news is that the CD32 version runs. The bad news is . . . well, that it runs. The interface is awkward—no mouse support, either—the CD-specific additions (mainly spot digitized sound) meaningless, and the anorexic gameplay now seems skeletal. (Whale's Voyage feels unfinished.) The only real fun I had was using the character creator to check out the end products of different combinations of parents.

Fly Harder

B–

Other Amigas √

This Thrust variant from *Krisalis'* budget label Buzz (about $20) starts tough (Level 2 is killer) and quickly gets next to impossible. But the task at hand—leading energy spheres to reactors without crashing into the pretty scenery—is so appealingly simple that you'll keep playing anyway. Possibly fruitlessly, but then, much of the pleasure in these things is in the trying.

Fireforce

B

Other Amigas √

C64 folks will quickly identify Fireforce (*International Computer Entertainment*, about $35) as an Amiga version of Green Beret. Outwardly, this is simply a sideways scrolling arcade-adventure. But patience: It's mission-based and time-sensitive and allows you to go inside buildings, where you'll often have to fight room by room and floor by floor.

It's not an AGA game—Fireforce appears to be a straight port from the standard Amiga version—and hence it's a bit crude graphically. (It's also a bit grisly; there's throat-slitting.) But it has a fine-tuned level of difficulty and the CD32's controller (for a change) is just the right go-between. ►

AGA GAMES

Body Blows Galactica

C+ | A1200 ✓ | CD32 planned. | Other Amigas √ | Not hard-drive installable. | Copy-protection.

Body Blows OffWorld, essentially, as a couple of the punchy guys from the original beat-'em-up beat up on ten new folks from five planets. Body Blows sparkled, and BBG (*Team 17*, about $35) is still better than much of the competition, but, like Alien Breed II, this is more of the same: Two creatures beating the tar out of one another with extra background colors and sonics. Not my cup of tea, but it will please fans of the genre and is better as a two-player game. Potential selling point for parents: No visible hearts or vertebrae. Potential problem with above theory: Mortal Kombat is more fun.

Ryder Cup Golf

C | A1200/4000 √ | CD32 – | Other Amigas – | Hard-drive installable. | Off-disk copy-protection.

This *Ocean UK* release (about $35) looks to be the disastrous International Open Golf with a new title, rules and some punching-up. The interface and presentation haven't changed appreciably, but the designers have tuned up the play, graphics, and speed, and it now feels more like golf than practicing some weird alien ritual.

Then again, they have a ways to go. I still don't like the peculiar, time-delayed way the ball moves off the tee; the graphics are still oddly blocky in spots; and the putting mechanics and presentation of the green contours leave a lot to be desired. This bogey isn't among the greats (Links and Nick Faldo), or even goods (Jack Nicklaus), but it might do in a pinch.

Dennis

F | A1200 √ | CD32 – | Other Amigas – | Not hard-drive installable. | Copy-protection.

This Dennis (*Ocean UK*, about $35) really is a menace. Just when you think Ocean's getting its act together on the strength of something like Robocop 3 or Jurassic Park, it tosses out another dead-eyed, movie-based platformer with pointlessly pretty graphics, improbable obstacles, a character who runs real weird, and a consuming lack of interest in its own identity . . . and makes the good stuff look like a fluke.

Burning Rubber

F+ | A1200 √ | CD32 – | Other Amigas ✓ | Not hard-drive installable. | Copy-protection.

Some race-y ideas adorn Burning Rubber (*Ocean*, about $35)—route planning and slowing down for right-angle turns—but they've been tied to a wretched driving game that does nothing else right. The cars are dinky, the perspective is a little weird, and the gameplay suggests no feel for the mechanics of driving. Wait for Rally. Burning Rubber stinks.■

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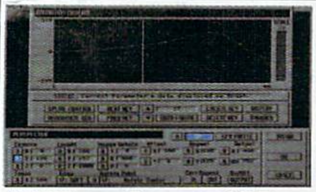
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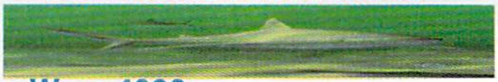
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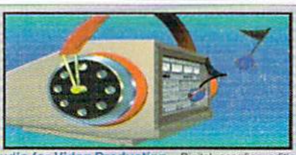
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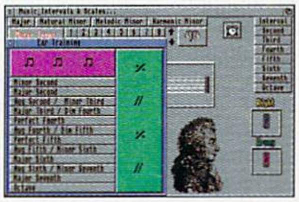
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BY TIM WALSH

VIDEO-OUT/VIDEO-IN

Q. *I use the composite-video-out jack on my Amiga 1200 to record my animations to videotape. What is the least expensive way to accomplish the opposite—bringing segments of video into my Amiga? I have a 68030 accelerator, 10MB of RAM, and assorted graphics software.*

Mike Rozack, Jr.
Brunswick Hills, Ohio

A. If you're content with the quality of composite-video output, and seek similar-quality composite input to the A1200, DCTV (Digital Creations) is one of the best choices. Your video equipment (camcorder or VTR) must be able to perform a "video still" so that DCTV can digitize a video frame. While not as slick as a full-blown video digitizing system, DCTV is a good choice for low budgets that can't handle investment in a genlock, TBC, or other video-input components.

If you find the DCTV signals a little too crude for professional applications, and have an A2000, A3000, or A4000 at your disposal, a VLab board ($599) from MacroSystemUS is another inexpensive alternative for flowing video into your Amiga. Designed specifically for composite-video input, this remarkable board grabs frames from video devices without the need for a TBC. An S-Video-compatible version of the board made its debut late last year.

24-BIT DISPLAYS

Q. *I own an Amiga 3000 and plan to purchase an A4000 and 24-bit graphics card in the near future. In reading all the advertisements and reviews, I'm not sure which is best. Why are they decreasing in price so rapidly? What are the advantages of the Retina Z3 over the original Retina, and are there compatibility problems?*

James R. Franklin
Alexandria, Virginia

A. Selecting a 24-bit display board depends largely on your needs, and, to a lesser extent, your current inventory of existing software. The professional artist looking to create artwork might not look for the same features in a display card as, say, a videographer.

I've used virtually all the 24-bit display cards as they became available, and my favorite is the Picasso (Expert Services), simply because its RTG (Retargettable Graphics) make it so transparent in daily operation. I've heard that certain 3-D software packages fumble in some Picasso screen modes when redrawing the screen, but I never experienced these problems.

For rapid viewing of 24-bit graphics, another long-time favorite of mine, Firecracker 24 (Impulse), can't be beat. While it requires a separate monitor, its superior RGB display makes it worth the additional small investment.

If you plan to create or manipulate 24-bit graphics, you'll want a 24-bit paint program to complement the hardware. The upcoming 2.0 EGS-SpectraPaint software for the EGS-Spectrum 24/28 shows promise as the definitive 24-bit paint program.

TV Paint, which accompanies both Picasso and the Retina (MacroSystem-US), is another good 24-bit paint program. While not as option-laden (or as fast) as Brilliance or DPaint, it's needed for working in a 24-bit environment.

The economics of supply and demand and advancements in technology have combined to lower the prices of display boards. Expect to see prices tumble even further.

Finally, the Retina Z3 for the A3000/A4000 takes advantage of Zorro-3 32-bit architecture.

1942 AND SUPER 72

Q. *Adjusting the Commodore 1942 monitor connected to my A1200 isn't easy. Following the instructions in the "ReadMe" file on the accompanying 1942 Set-up disk, I could center and adjust every available screen mode except Super 72. When I try to adjust Super 72 mode, the monitor's screen stretches horizontally, and starts generating electronic noise. Can I fix this problem?*

On a related note, after I save the settings made with the Overscan editor found in Preferences, some display modes need further adjustments. The problem is if you adjust one mode so that it displays just perfectly, the other modes are slightly askew. What's the best way to adjust the screen modes using the Overscan editor and the 1942 set-up software?

Dr. James C. Kinard
Rio Piedras, Puerto Rico

A. It's not the dimensions of Super 72 display modes (typically 400x300) that the 1942 does not support; it's the scan rates (71 Hz, 23.21 kHz). The freely distributable program, Moned version 2C by Raul A. Sobon, will let you fiddle with scan-rate adjustments to display Super 72 mode, but be aware that you risk damaging your monitor. To its credit, the 1942 supports a wide range of display modes, including a number of the high-resolution modes generated by 24-bit graphics cards.

Using ScreenMode from Preferences, select Double NTSC Hi-Res, No Flicker Mode. Now, via the Overscan editor, set a screen size of 720x447 with about 1/4-inch of space around the left and right fringes of the monitor. Once you make similar adjustments on your A1200, you may find software that normally displays on the public screens will look fine.

I've discovered that older software that uses custom low-resolution screens has a tendency to be skewed towards the right-hand side of the screen. These screens aren't affected by the Overscan settings, but they are affected by the adjustments made with the 1942's Horizontal Phase knob during tuning with the 1942 set-up software. Just turn the knob counterclockwise to correct this problem. Remember to reset it when you return to the Workbench. ■

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WB139: MIDI Performance Manager Utility to manage a MIDI synthesizer and other MIDI equipment. Requires WB 2+.
WB138: 3.0 Extras #2 - Another disk chocked full of utilities to unleash the power of Workbench 3.0 and AGA!!
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FD87: OXYD- A commercial quality game--similar to Marble Madness in nany ways, but allows two computers to link & play together...see how many of the 200 landscapes you can complete without having to get the hint book!
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FUN DISKS

FD6: GAMES! - This disk is chock full of games including; Checkers, Clue, Gold - A new slide the pieces puzzle, Jeopard - An enhanced version of Risk, RushHour - Surprisingly addicting, and SpaceWar - Best described as a cross between Combat-Tanks and asteroids.
FD7: Pacman - This disk contains several pacman type games including; PacMan87, MazeMan and Zonix.
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FD12AB: Star Trek, The Game - This is by far the best Star Trek game ever written for any computer. It features mouse control, good graphics, digitized sound effects and great game-play. Counts as 2 disks. Req. 1Mb and two drives (or hd).
FD13: Board Games - contains Monopoly, Dominoes, Paranoids, and others.

DD83: IBM - Not one, but *TWO* IBM emulators that will allow the running of MS-DOS software *with* Amiga programs!!! Comes complete with programs to turn your Amiga floppy drives into 720K IBM compatible drives. Also, check out our PC-Task emulator on our DevWare Video page!

FD17: Educational Games - This disk includes several games for youngsters including geography, math, science, and word games, also includes Wheel of Fortune.
FD20: Tactical Games - MechForce; A game that simulates combat between two or more giant robots. Simple words can't begin to give you the feel of piloting a 30 - 40 foot tall, fire breathing, earth shaking colossus that obeys your every whim.
FD27: Arcade Games - This disk is loaded with some great games. Includes, Raceorama a great racing car game with ten different courses, MiniBlast a helicopter gunship type clone, Shark in the same class as frogger, and SBreakout the original breakout with more.
FD31: Games! - Air Traffic Control - a good ATC simulation, Black Jack Lab - a full featured set of card games, ChessTel - play chess with your friend in distant and remote places with this game and a modem, labyrinth - a well done text adventure game (like an infocom game), and MouseTrap - a 3d maze game.
FD32: Flight Simulator - An instrument simulator for a DC10.
FD33: Arcade Games - Ffreddy a Mario Brothers type of game, Gerbils a target practice game, PipeLine a German interpretation of Pipe Dreams, Tron a light cycles version, and Wetroids a wonderful version of asteroids with a hilarious twist.
FD38: Games - Cribbage Master - A great cribbage game and tutor, Spades - a well done card came, ChineseCheckers - A computer version of this classic, Puzz - a slide piece puzzle game and construction set.

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FD39A&B: Star Trek, The New Generation - This is a completely different version of Star Trek than that found on FD12. This one was created by the German author Tobias. Excellent!!! Counts as two disks. Requires 512k
FD50: Submarine Game - Sealance, one and a half years in the making, this is an outstanding submarine tactical game. Commercial quality, highly recommended.
FD57: Arcade Games - Includes 2 truly commercial quality games. MegaBall, an Arkanoid-ish game, features 5 musical scores and addicting gameplay. Gravity Attack is a psychadellic trip through several different worlds—each different.
FD59: Game Potpourri - Xenon III is an almost exact clone of the commercial game of the same name...a great shootemup. Crossword will take lists of words & automatically generate word-search puzzles for any Epson compatible printer.
FD60: Games - In Nebula, race over a 3d world to destroy enemy installations. Interferon; a *great* Dr. Mario clone. Enigma; is it a game or puzzle?
FD61: Games - Solitaire; great graphics, plays two versions. Klide; an interesting piece of eye candy. Extreme Violence; 2 player kill or be killed game. YATC; A Tetris clone with Artifical Intelligence. Genesis; create realistic 3d fractal worlds.
FD62: PomPom Gunner. An extremely smooth and well done World War II gunner simulation. Req. 1 megabyte of memory.
FD67: Arcade - Includes Llamatron a well-done 'Robotron' clone. Hate is a "terrific" Zaxxon clone with multiple levels/worlds and smooth diagonal scrolling...a 10!
FD69: MindGames - Had enough of shoot-em up games? Relax and let these 21 games exercise your mind instead of your wrist.
FD73: Arcade Series - Intruder Alert! is a MULTI-level "Berserk" clone. Features smooth gameplay, great graphics & digitized sound f/x.
FD74: Arcade Series - RingWar is an "Outer Limits" clone with vectorized graphics. MotherLode is a "Lode Runner" clone with 50 levels! In BlitzTanks, they're coming at you from all directions!! Call in air strikes and use your heavy artillery to survive!
FD75: Arcade Series - Descender is a clone of the classic arcade game "Tempest"; complete with vectorized graphics. Tanx is the classic battle of trajectories and inertia between two tanks—incredibly well done! Search is a maze game unlike any other—included is a level editor too. (Tanx requires 1 meg chip memory=Fat Agnus)
FD77: Arcade Series - Galaga'92 is a clone of the arcade game with several gameplay enhancements--with smooooth, sharp graphics, it's better than the original! Pharaohs Curse is a clone of the original C64 classic. Diplomacy is a beautifully computerized version of the Avalon Hill board game--conquer or be conquered!

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FD85ABCD: AmigaWorld's Best - These four disks contain the *hottest* p/d games of '92! Includes Mother Lode, Moria, Minefield, Poing, Intruder Alert, Deluxe PacMan, Rocky and Super Artillery (see Dec. '92 AmigaWorld) Four disk set, counts as three.

FD81: SuperGames - Some of *the* best games--Donkey Kong is better than the original *with an extra level*! Frantic Freddie and TrailBlazer are both fast-paced arcade games. Mad Bomber is the classic game of "Kaboom" redone with an Amiga flare. All of these games are excellent!
FD82: Intrepid - In the Arctic ice, you control a tank on a mission to rescue hostages in this superbly crafted Amiga original.
FD84: Games! Deluxe PacMan is better than the original--20+ mazes, special "power-ups" with *oustanding* graphics. ThinkAmania is the classic game of concentration--with *beautifully* drawn HiRes images.

WORKBENCH DISKS

WB4:Telecommunication - This disk contains several excellent pd communication programs: Access 1.42, Comm 1.34 & Handshake 2.12a. See also WB102 & WB115.
WB5: Fonts #1- 35 bitmap fonts. Also included are five PageStream fonts,and ShowFont - a font display program.
WB6: Fonts #2 - ShowFont allows you to quickly and painlessly view all 256 characters in a typical font. Includes large AmigaDos system fonts (many up to 56pts).
WB7: Clip Art - This disk is loaded with black and white clip art. Art includes, trees, watches, tools, US and State maps, and more.
WB9: Icons - Truly a multitude of various types and kinds. Also includes IconMiester, IconLab, and others great utilities to help generate icons.
WB12: Disk Utilities - This great disk is loaded with wonderful utilities for everything including making disk labels, disk cataloging, disk optimizing, disk and file recovery archive and organizing, and all sorts of file manipulation. A must have!
WB13AB: Printer Drivers and Generator - over 70 different drivers (including HP LaserJet 3 & 4!), also includes a printer-driver generator. Two disk set counts as two.
WB15: Business - This disk contains a spreadsheet, a database, a project/time management program and financial analysis (stocks).
WB18: Word/Text Processors - This disk contains the best editors. Includes,TextPlus (v2.2e) a full featured word processor, Dme(v1.35) a great programmers editor with strong macro features,TexED(v2.8) an enhanced Emacs type editor, and a spell checker.
WB22: Fonts #3 - Several more great fonts. These, like the other font disks work great with Dpaint and WYSIWYG word processors.
WB23: Graphics and Plotting - Plot, a 3-D mathematical function plotter. Can plot any user defined function, BezSurf2 - produce awesome pictures of objects one could turn on a lathe. Can also map IFF image files onto any surface that it can draw. Now compatible with most 3D packages, and VScreen - makes a virtual screen anywhere.
WB25:Educational - On this disk are two programs that can generate maps of differing types, World Data Base uses the CIA's data base to generate detailed maps of any entered user global coordinates. Also Paradox a great demonstration of Albert Einstein General Theory of Relativity.
WB27: Nagel - 26 Patrick Nagel pictures of beautiful women.
WB33:Circuit Board Design - several terrific routines for the electronic enthusiast, Including PCBtool - a circuit board design tool, LogicLab - circuit logic tester, and Mcad (1.26) a well done new release of this PD CAD program, now comes with predrawn common circuit components for insertion into schematics.
WB35: 3D Graphics - This disk contains 3Fonts - Full vector font set for use with 3d programs, FontMaker - make 3d fonts from any system font, Make3DShape - create 3d shapes from any image, DumptoIFF - create 3d animations preserves pallet, World3d - a demo of a front end for use with DKBRender.
WB36: Graphics - On this disk are several programs to create stunning graphical images including, MPath - creates swirling galaxy images, Roses - produce an unlimited number of variations of images that a symmetrically similar to a rose, SimGen - display those spectacular images as part of your workbench, and RayShade - a very good raytracing program, create your own beautiful 3d graphic models with this one!
WB37: Educational - Educational games and puzzles that cover math, geography, spelling, and books. Ages 6 - 15
WB38: Plotting and Graphics - Plotxy is a powerful full featured plotting package. Used by many colleges and universities. Highly recommended. Plans - a incredibly well done Computer Aided Drafting program, very full featured. Tesselator - a program that helps generates fantastic looking, recursive M.C. Ecsher type pictures.
WB41: Music - MED an incredibly well done, full featured music editor. Create your own stunning music directly on your the Amiga. Similar to SoundTracker but better. Very powerful easy to use program. Version 3.20--compatible with WB2+.
WB43: Business - This disk contains AnalytiCalc - probably the most powerful spreadsheet program on the Amiga. A full featured spreadsheet with many features expected in a commercial package. Req. 1.2 MB

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WB46: Clip Art - HighRes clip art with the following motifs - embellishments (borders, dodads ....), people, & transportation.
WB47: Clip Art - Hires clip art. Motifs - hair, drafting, summer, animals and macfood.
WB48: Clip Art - Hires clip art. Motifs - Holidays, music, medical, and misc.
WB53: Graphics - Raytracing programs generate absolutely stunning realistic looking planes, rockets, buildings..., and surreal images. C-Light is the most powerful EASY-TO-USE of it's kind we have seen to date. This is easily better, and more full featured, than similar commercial programs costing in the hundreds of dollars. Also, sMovie - a full featured video text titler similar to ProVideo, Broadcast Titler. Great video scrolling, wipes, special effects, and more...
WB54: Printing - This disk contains several routines to help with the chore of printing. Includes Gothic - Finally a Banner printer for the PD! PrintStudio -a well implemented all-purpose printer-utility with a very comfortable graphic interface and many advanced features, Lila - with ease, print ASCII files to a PostScript printer, and more.
WB55: Application - XCopyIII - a full featured disk copier, make backups of copy protected disks. RoadRoute - find the quickest route from one city to another, highway description included. Diary - a diary program like "Dougy Houser M.D", Cal - a calendar program, Magman - a database tailored for articles and publications.
WB57: Animation - This disk has several "Demo" style animations, Including, Blitter, Lolly, Sun5, vertigo, vortex, and xenomorph.
WB62: Midi Utilities - Several useful midi utilities including, programs to transfer to and from several music programs to midi, a midi sysex handler, a midi recorder with timebase, display midi info, file sequence player, and a few scores.
WB63: Disk Utilities #3 - Several highly recommended programs to aid in removing duplicate files from your hard drive, performing file backups, Binary editing, fast formatting, file recovery, and forced disk validation of corrupt disks.
WB66: Icons #2- Lot's of neat icons. Also, several wonderful programs that to let you create your own icons, modify and manipulate icons and info structures.
WB69: Music - 90 minutes of classical and modern electronic music for you Amiga.
WB75: Music - over 100 instruments files (.inst) and sample sound files (.ss)
WB79: Home & Business Accounting - Includes Ckbacct - the most complete checkbook accounting program going, LCDCalc - this well done calculator has a very large display and operates from the keyboard or mouse, Mileage master - monitor your automobile mileage with this mileage log, Grammar - a grammar checker, and Worldtime - find out what time it is in up to 50 global cities.

WB119ABCDE: Font Set This collection contains over 100 typefaces for use with Professional Page/PageSetter 3+ or PageStream 2.1+. These fonts will output to any laser printer or dot-matrix printer with no jaggies, thanks to outline fonts. Very pro-looking. *5 disk set, counts as 4.*

WB81: Great Applications - DataEasy a very easy to use, database program. Don't let the ease of use fool you, this is a very full featured database program including full printer control for address labels and mail merge applications. Also includes, TypeTut a good typing tutor, RLC a full featured label printer, Banner, a multi-font banner maker, and Budget a home accounting in a program. Highly recommended.
WB82: Animations - Four full length, well done "movie" style animations. Including, Coyote, JugglerII, GhostPool, & Mechanix. 2 disks, counts as 1.
WB93: Workbench 1.3 Extras #2 Contains the utilities that Commodore should have shipped with the Amiga; VirusX4.0, Snap, FixDisk (recover corrupt/deleted files), Disk Optimizer (floppy & hard), MachIII (screen blanker, hotkey, mouse accel., macro, clock utility), GOMF (a gurubuster)and PrintStudio.
WB95: Checkbook Accountant 2.1 - Definitely commercial grade; we've seen many checkbook programs and this is the best. Full budgeting, transaction recording & report generation.
WB96: Dupers - Contains XcopyIII & Nib which will backup copy-protected programs. FreeCopy removes copy protection from several programs, and SuperDuper will crank-out fast AmigaDOS copies.
WB102: Telecommunications - Contains the programs NComm 2.0 and VT100-29B. Zmodem protocols, XPR protocol support, full VT100 emulation. NComm's script language is so powerful it can create a full-featured BBS system.
WB106: Home Manager - This is a great all-in-one address book with an autodialer/notepad/to-do list/appointment scheduler/home inventory database and phone number dialer.
WB108: OctaMED - This breakthrough program doubles your Amiga's sound capabilities from 4 channels to an ear-popping 8 channels! All the renound editing capabilities of MED plus 4 more channels! If you thought your Amiga sounded good before...you aint heard nuthin' yet!
WB109: VerseWise - Display, search and print The New Testament.
WB113: Sid II - Why pay 40 bucks for a directory utility, when this one will do it all plus much more! A truly professional-caliber program. Sid 1 was our best, now *completely* rewritten, Sid 2 will astound you.
WB114: Fonts #4 - Contains 36 bitmap system fonts.
WB115: Telecommunication - If you have AmigaDOS 2.04+ and a modem, then this is *THE* program for you. Term *totally* conforms to the User Interface Style Guide for 2.04, has an ARexx port, and supports all popular file-transfer protocols through XPR libraries. We wish all programs were this good.
WB116: Databases - This is what you've been waiting for! Contains 5 uniquely specialized database programs for tracking: Videotapes, CD's, Magazine Articles, Comic Books and Trading Cards!
WB120: Grinder - a complete graphics conversion package that supports GIF's, JPeg, Neochrome, Degas, PCX, Targa, TIFF, HAM-E and IFF format pictures. An invaluable tool for all desktop-videographers and desktop publishers.

WB118: Amiga Beginner - *You asked for it!* A complete tutorial for the beginner on using the Amiga. Starts you off at the power-switch and takes you through to the CLI/Shell and all points in between. *Bonus!* Also included are 16-color icons to replace *every* icon in your 2.0+ Workbench.

WB121: ProPage3/4 Enhancer - This disk contains over 40 "Genies" for use with ProPage 3+, including useful ones like Make Pie Chart and Resize Text to fit Box to name a few. Also includes structured & bitmap clipart for unique borders...a *must have* for all PPage 3 users.
WB122: System Optimizer - KCommodity enhances your system, gives memory meters, mouse/keyboard enhancements, online timers plus *many* others...too numerous to list! REorg will optimize hard and floppy-disks for a big speed increase. HDMem will allow you to use up to 2 megs of hard-drive space for virtual memory! (Req. 68020+ w/MMU) All programs require 2.0+.
WB123AB: Flags of the World - same as WB124, but for Workbench 1.3. Req. 1MB. 2 disk set, counts as two.
WB124: Flags of the World - Two modes: click and learn or a game to test your knowledge. Great graphics--fantastic learning tool. Has current Russia & Yugoslavia republics. Req. Workbench 2.0+ & 1MB RAM.
WB127: Blankers - Over 20 different screen blankers. Most run on Workbench 1.3+...a few require 2.0+
WB128: ColorFonts - contains 12 color bitmap fonts for use with DPaint or any software that supports ColorFonts.
WB129: Super Virus Killer - From Safe Hex Int'l, who catalogs and kills Amiga Viruses *worldwide*--a complete virus system that knows all Amiga viruses...updated often. Req. WB 2+
WB130: ToolManger 2 - The ultimate tool manager for your Workbench. Add animated icons, sound effects and 'docks' of programs to your WB..very useful! Req. 2.0+ and hard drive.
WB131: Magic Workbench - Make your 2.04+ Workbench sizzle with style with these 8-color dithered icons. Easy auto-installs in minutes. Req.'s WB2.04+ and hard drive.
WB132: Canon Studio Version 2 - Special printer Preferences editor and drivers for BJC 600, 800 & 880, LBP, A1, A2, BJC 800, BJ 5, 10, 20, 200, 230, 300, 130.
WB133: Panasonic Studio - Special printer Preferences editor and driver system for all Panasonic 9 & 24-pin printers.
WB134: 3.0/AGA Blanker - BlitzBlanker for WB3.0+ 14 different blankers to really show off your AGA machine!

DEV DISKS

DD54: Compression - The best file compression programs and aids for the Amiga. Includes Arc, Lharc, Lhwarp, Pkax, PowerPacker a must have by all, Zip, Warp, and Zoo.
DD71AB: C Compiler - This disk contains DICE, Matthew Dillon's full featured, powerful C compiler & environment. 2 disks, counts as 2.
DD79abcd: Amiga "C" Tutorial - This is the most comprehensive C language--*Amiga oriented*--set of tutorials available. Includes full working examples, source code and an incredible set of lessons. Included are full discussions and examples for Amiga programming. 4 disk set, counts as 3.
DD86: The Programmer - Includes GadTools and REQTools which will allow you to create your user interfaces and then the program will automatically generate "C" source code or Assembly-code. Requires, and writes code for, AmigaDOS2+.
DD89: UEdit - Probably *the* most powerful text editor for the Amiga. Previously commercial, now public domain. 1 MB.
DD91: ParBench - Allows you to easily connect/network two Amigas/CDTVs together and share storage devices. Req's custom cable (docs to make cable included--easy).
DD90: Advanced Utilities - CompressDisk doubles the capacity of your hard-drive on the fly with compression!!! Also contains: disk optimizer, SCSI mount utility, Keymap editors, Enforcer, Undeleter & more. Most programs require 2.0+.

VIDEO DISKS

VO9: Imaging - Included on this disk are the indispensible utilities, Rend24, ViewTek and the JPEG utilities. Rend24 is invaluable for 24-bit animators allowing for previews on AGA and non-AGA Amigas. ViewTek plays back anims of all sorts including Anim 5, 7 and 8 formats.

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THE LAST WORD

Kudos, complaints, comments, concerns, and contributions from our readers.

GAMETALK

The CD32 system is ideal! It has everything it needs to succeed . . . except proper marketing. If Commodore is going to sell systems to customers, then they should try to do everything possible to keep us interested. I have written letters to all of the "top name" US software companies encouraging them to support the CD32 format. If every single reader interested in the CD32 would also write a short letter to encourage CD32 support, I think we could really get some attention for this excellent machine. Let the game developers know that there is a solid market here to support them!

Tony Gore
Charlotte, North Carolina

WORDLY WISE

I use Final Copy II when I want to impress people with a resume, cover letter, or greeting card. I use ProWrite when I want near letter quality for routine correspondence. I get near laser quality when I use Final Copy II by setting the print density to 6 on my 9-pin Star NX-1000 Rainbow printer. To see my words clearly on the screen in Final Copy II, I use the ITC Korinna font in 18-point size. As for ease of use, Final Copy II is as easy to use as ProWrite.

David Bradley
Champaign, Illinois

AMIGA/MAC/PC/FEEDBACK

I was so delighted with the article that I taped a copy to my office wall. Now my colleagues can see that I'm not the only person who thinks that the Amiga is a great computer for the money.

Tom Napier
North Wales, Pennsylvania

And to think that this flimsy four-page feature with more 60-point headlines and keyboard phots than solid journalism made the front cover instead of Sheldon Leemon's well-researched "AGA Fixes"!

Todd Baldridge
Markleville, Indiana

The prices of the PC and Mac reflected faster processors, more RAM, larger hard drives, and monitors. An Amiga 4000 with a 33 MHz processor, 10MB of RAM, a 270MB SCSI-2 hard drive, and a monitor costs $3699, considerably more expensive than the PC or Mac.

The author should have included a structured-drawing program (such as Professional Draw or Art Expression) for an additional $199, as well as Final Writer (add $100), which is closer in performance to Microsoft Word and Lotus Amipro than other programs.

These modifications bring the Amiga's bottom line to $5214, which is still cheaper than the competitors. This illustrates that while Commodore has lost the price war with the PCs and Macs, software producers keep the Amiga competitive.

> *I'm not the only person who thinks that the Amiga is a great computer for the money.*

Jeffrey T. Powell
West Covina, California

Although I agree that, overall, the Amiga is superior out of the box, I don't feel that the comparison was completely fair. If the A4000/40 were, say, $1500 and included a monitor, it would be in a much better position to compete with the ultra-cheap PCs. The real Amiga bargain is the $399 Amiga 1200. Decked out with a 33 MHz '030 and '882, 80MB hard drive, and 4MB of fast RAM, my system came in under $1200. Now, if only Commodore made an '040 A1200.

Russell P. Jones
Orlando, Florida

I am a teacher of 25 years and teach high school photography and computer graphics classes. I'd like permission to make copies of your article, "Amigas, PCs, Macs . . . Oh, My!" (Apr. '94), which will be used as part of a presentation to the school committee to requisition new equipment for the computer graphics lab—Amigas to replace Apple II GSs.

Richard Pacheco
New Bedford, Massachusetts

Permission granted, Richard . . . and good luck with the request.—Eds.

CONNECTIONS

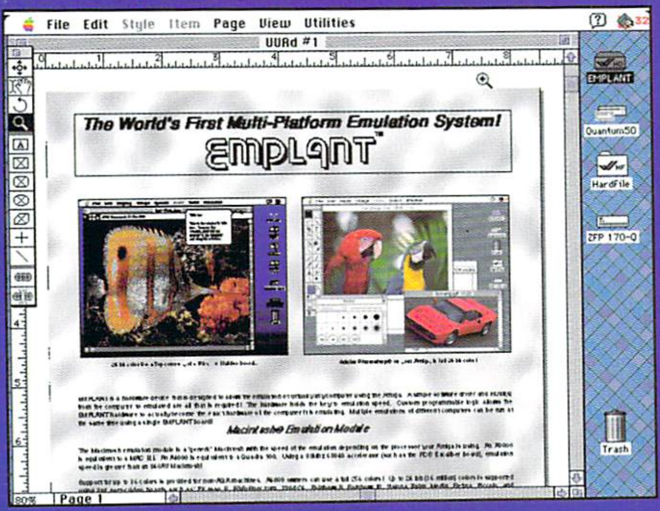
Your "Net Gains" article (Mar. '94) fails to mention Thunder Ridge Software's DECnet package, TSSnet, which lets the Amiga become an end node of a VAX cluster network, and the complementary software, GfxBase, which lets the Amiga connect to a DECnet network and run under an X-Windows environment. These allow the Amiga to access the Internet over the host system that it is connected to and can either be run using an Ethernet card, such as the Commodore A2065 board, or over a serial line.

Also, your review of AsimCDFS 2.0 and CDx states that both packages pole the CD-ROM to check for disk ejection, causing the hard-drive light to flash constantly. While I cannot speak for AsimCDFS, the CDx software has an option that lets you turn this off. On my A3000 with CDx and an NEC MultiSpin 38 Portable CD-ROM drive, the CD will stop spinning if you just close its Drawer icon.

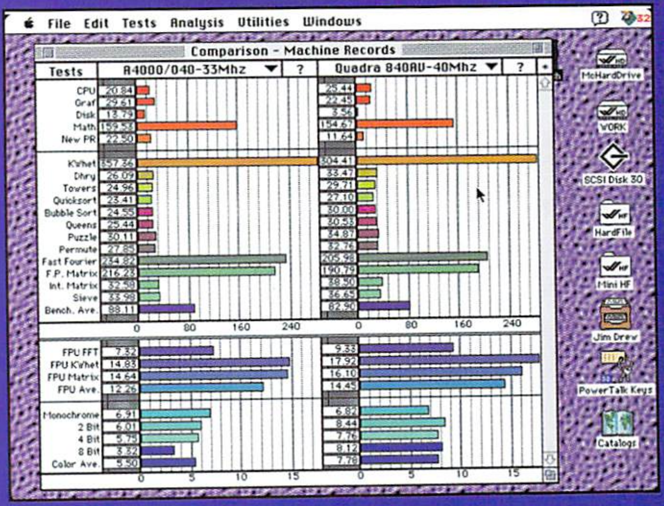
Kevin E. Gardner
Holland, Michigan ■

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May 1994 *AmigaWorld* ad for EMPLANT - Created using **QuarkXPress®** with an A3000 EMPLANT system!



"Speedometer v3.23" speed comparison (68040 CPUs) 33Mhz A4000 vs. 40Mhz 840AV - Hey! That's not fair!

EMPLANT is a hardware device that is designed to allow the emulation of virtually any computer using the Amiga. A simple software driver and ROM(s) from the computer to emulated are all that is required! The hardware holds the key to emulation speed. Custom programmable logic allows the EMPLANT hardware to actually become the exact hardware of the computer it is emulating. Multiple emulations of different computers can be ran at the same time using a single EMPLANT board!

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Support for up to 16 colors is provided for non-AGA machines. A4000 owners can use a full 256 colors! Up to 24 bit (16 million+) colors is supported using 3rd party video boards such as: Picasso II, EGS-Spectrum, Vivid-24, Rainbow II, Rainbow III, Visiona Paint, Merlin, Retina, Retina Z3, Piccolo, EGS110/24, and OpalVision! ...and we'll support any future video boards that are suitable for use with the emulation!

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Four different versions of EMPLANT are available, ranging in price from $279.95 to $399.95. Order direct from Utilities Unlimited Intl., Inc. or from one of our dealers (more than 200 dealers across the US and overseas carry EMPLANT). US customers, please include $10 for shipping/handling (all orders are sent UPS 2 day delivery). Customers outside North America, please contact Blittersoft: +44 0908 666265 for the dealer nearest you. **Dealer inquires are welcome!**

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